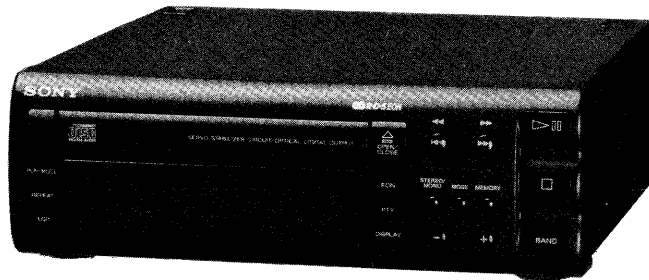


HCD-H4900

SERVICE MANUAL

AEP Model
UK Model



HCD-H4900 is the tuner, CD player section in MHC-4900.

Model Name Using Similer Mechanism	HCD-H7900
CD Mechanism Type	CDM14M-5BD13X
Base Unit Type	BU-5BD13X
Optical Pick-up Type	KSS-240A

SPECIFICATIONS

Tuner section

FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range 87.5 – 108.0 MHz
Antenna terminals 75 ohm unbalanced
Intermediate frequency 10.7 MHz

AM tuner section

Tuning range
UK and European models (except
Germany and Italy):
MW: 531 – 1,602 kHz
LW: 153 – 279 kHz
German and Italian model:
Aerial AM loop aerial (antenna)
(Antenna) External aerial (antenna)
terminals
Intermediate frequency 450 kHz

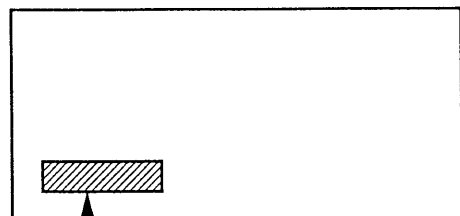
CD player section

System Compact disc digital
audio system
Laser Semiconductor laser
Wavelength 780 – 790 nm
Frequency response 2 Hz – 20 kHz
Signal-to-noise ratio More than 95 dB
Dynamic range More than 90 dB
Dimensions Approx. 225 x 80 x 265 mm (w/h/d)
(8 7/8 x 3 1/4 x 10 1/2 inches)
Mass Approx. 2.3 kg
(5 lb 2 oz)

TUNER/COMPACT DISC PLAYER
SONY®

MODEL IDENTIFICATION

— BACK PANEL —



4-961-887-1□ : AEP

2□ : G

3□ : IT

4□ : UK

- G : German model
- IT : Italian model

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

CAUTION : INVISIBLE LASER RADIATION WHEN OPEN.
AVOID EXPOSURE TO BEAM.

ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING NÅR
SIKKERHEDSÅFBRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSÆTTELSE FOR STRÅLING.

VARO! : AVATTAESSA JA SUOJALUKUTUS OHITETTAESSA
DLET ALTIIN LASERSATEILYLLE.

VARNING : LASERSTRÅLING NÅR DENNA DEL ÄR ÖPPNAD
OCH SPÄRREN ÄR URKOPPLAD.

ADVARSEL : USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES
UNNGÅ EKSPONERING FOR STRÅLEN.

This caution label is located inside the unit.

Section	Title	Page
1.	SERVICING NOTE	3
2.	GENERAL	4
3.	ELECTRICAL ADJUSTMENTS	
	Tuner Section	5
	CD Section	7
4.	DIAGRAMS	
4-1.	Circuit Board location	9
4-2.	Semiconductor Lead Layouts	10
4-3.	Block Diagram	11
4-4.	Printed Wiring Board — CD Section —	16
4-5.	Schematic Diagram — CD Section —	19
4-6.	Schematic Diagram — Main Section —	24
4-7.	Printed Wiring Board — Main Section —	29
4-8.	Printed Wiring Board — Tuner Section —	32
4-9.	Schematic Diagram — Tuner Section —	35
4-10.	IC Pin Functions	
	• IC101 (CXD2515)	37
	• IC103 (CXD2565AM)	39
	• IC201 CD System Controller (TMP87CH47U-4103) ...	40
	• IC301 Tuner System Controller (μPD78013GC-593-AB8)	41
5.	EXPLODED VIEWS	
5-1.	Chassis Section	43
5-2.	CD Mechanism Section (CDM14M-5BD13X)	44
5-3.	Base Unit Section (BU-5BD13X)	45
6.	ELECTRICAL PARTS LIST	46

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Note that the minus side of a tantalum capacitor may be damaged by heat.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK Δ OR DOTTED LINE WITH MARK Δ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1

SERVICING NOTE

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body. (i.e., Static electricity)

During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.

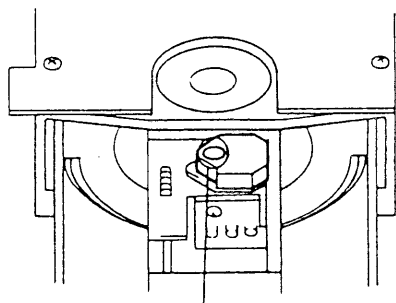
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

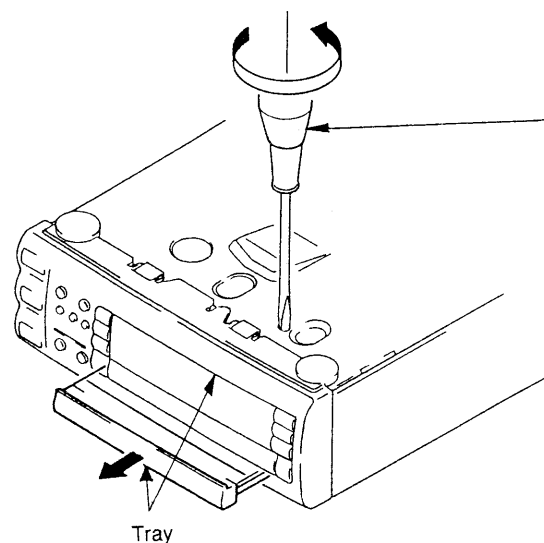
LASER DIODE AND FOCUS SEARCH OPERATION CHECK

1. Turn POWER switch on with no disc inserted and the disc table closed.
2. Confirm that the following operation is performed while observing the objective lens.



- ① Confirm that laser beam is on.
- ② Up and down motion of the objective lens. (3 times)

HOW TO OPEN THE DISC TRAY WHEN POWER IS OFF



Insert a flat driver into the aperture of the bottom of the unit, and turn in the direction of arrow (toward OUT direction).

* To close the disc tray, turn the driver in the opposite direction (toward IN direction).

Note : Do not turn the set upside down when a disc is inside.

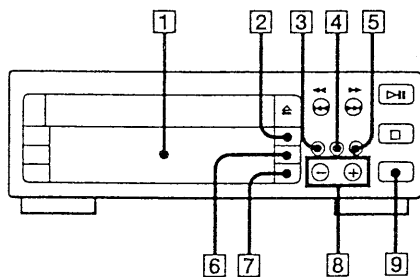
SECTION 2

GENERAL

This section is extracted from instruction manual.

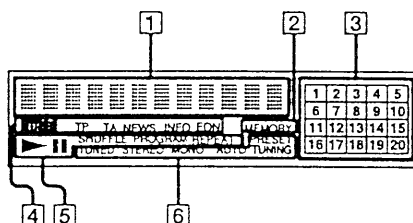
Front Panel

Tuner section



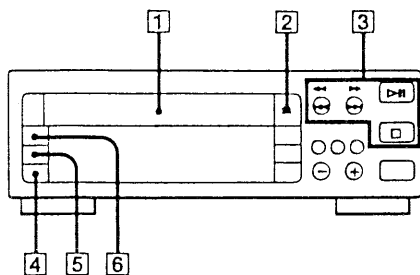
- 1 Display window (7, 10)
- 2 EON (Enhanced Other Networks) button (12)
- 3 STEREO/MONO button (10)
- 4 MODE button (10)
- 5 MEMORY button (11)
- 6 PTY (Programme Type) button (13)
- 7 DISPLAY button (11)
- 8 -/+ buttons (10)
- 9 BAND button (10)

Display Window



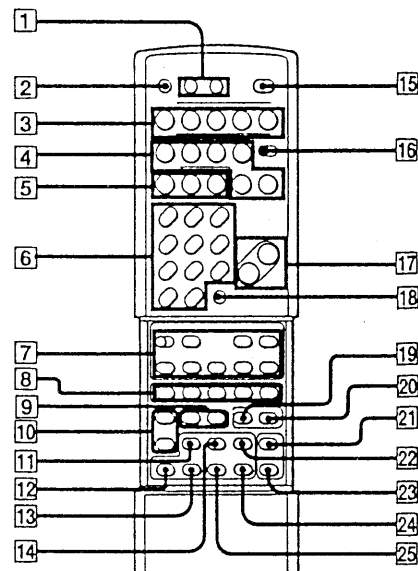
- 1 Frequency/playing time indication (7, 10)
- 2 MEMORY indication (11)
- 3 Music calendar/preset radio station numbers (7, 11)
- 4 RDS service indications (12)
- 5 CD play mode indication (7)
- 6 Tuner indication (10)

CD player section



- 1 Disc tray (7)
- 2 OPEN/CLOSE (open/close of the disc tray) (7, 15)
- 3 CD player operating buttons
 ◀◀◀▶▶▶ (manual search/AMS) (7)
 ▶▶▶ (play/pause) (7, 15)
 □ (stop) (7, 15)
- 4 EDIT button (17)
- 5 REPEAT button (9)
- 6 PLAY MODE button (8)

Remote commander



- 1 TAPE DECK A/B buttons (14)
- 2 SLEEP button (23)
- 3 CD/MD operating buttons (7)
- 4 Cassette deck operating buttons (14)
- 5 Tuner operating buttons (10)
- 6 CD/Tuner/numeric buttons (7, 11)
- 7 VCR operating buttons (26)
- 8 TV operating buttons (26)
- 9 MENU 1, 2 button (15, 20)
- 10 FUNCTION </> buttons (16, 25, 26)
- 11 CONTINUE button (8)
- 12 CHECK button (9)
- 13 CLEAR button (9)
- 14 SHUFFLE button (8)
- 15 SYSTEM POWER switch (7)
- 16 CD/MD switch (7)
- 17 VOLUME +/- buttons (7, 20)
- 18 MUTE button (20)
- 19 P.FILE button (22)
- 20 DIRECT button (15, 21)
- 21 RDS EON button (12)
- 22 PROGRAM button (8)
- 23 DISPLAY button (21)
- 24 TIME button (8)
- 25 REPEAT button (9)

SECTION 3 ELECTRICAL ADJUSTMENTS

TUNER SECTION

Precautions in Repairing

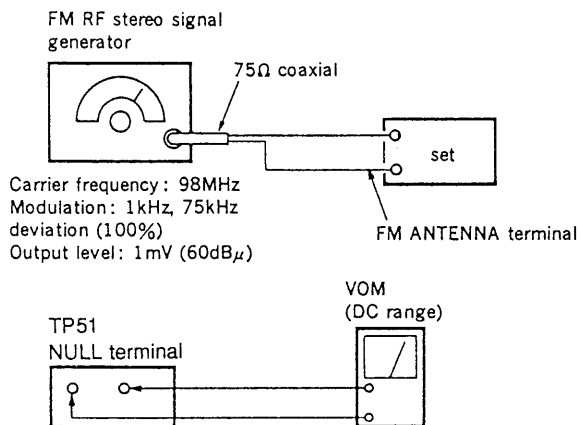
If the front end unit fails, it is difficult to repair the inner circuits, so replace the entire front end unit.

FM SECTION

FM Discriminator Adjustment (NULL Adjustment)

Setting :

BAND : FM



Procedure :

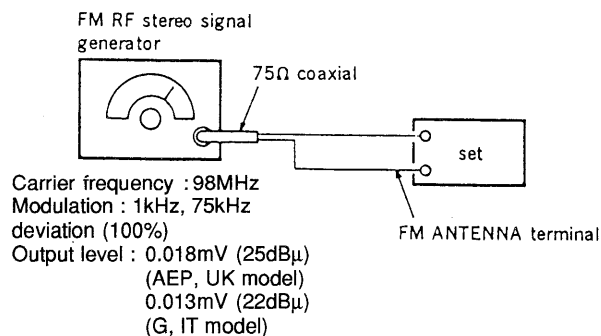
1. Tune the set to 98MHz.
2. Adjust IFT51 to a 0Vdc reading on the VOM.

Note : FM Tuning Level adjustment should be made after the FM discriminator alignment.

FM Tuned Indication Lighting Level

Setting :

BAND : FM



Procedure :

1. Tune the set to 98MHz.
2. Adjust RV52 so that the TUNED indicator goes on.

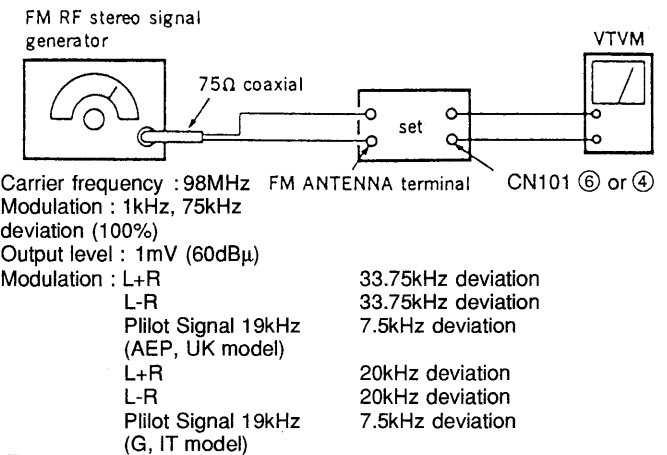
Note :

IT : Italian model
G : German model

FM Stereo Separation Adjustment

Setting :

BAND : FM



Procedure :

Tune the set to 98MHz.

FM stereo Signal generator Output Channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ [Ⓐ] Adjust RV53 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ [Ⓒ] Adjust RV53 for minimum reading.

L-CH Stereo separation : Ⓐ - Ⓑ

R-CH Stereo separation : Ⓒ - Ⓓ

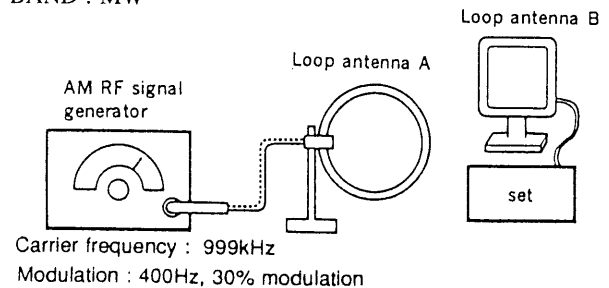
The separation of both channels should be equal.

AM SECTION

AM Tuner Indication Lighting Level

Setting :

BAND : MW

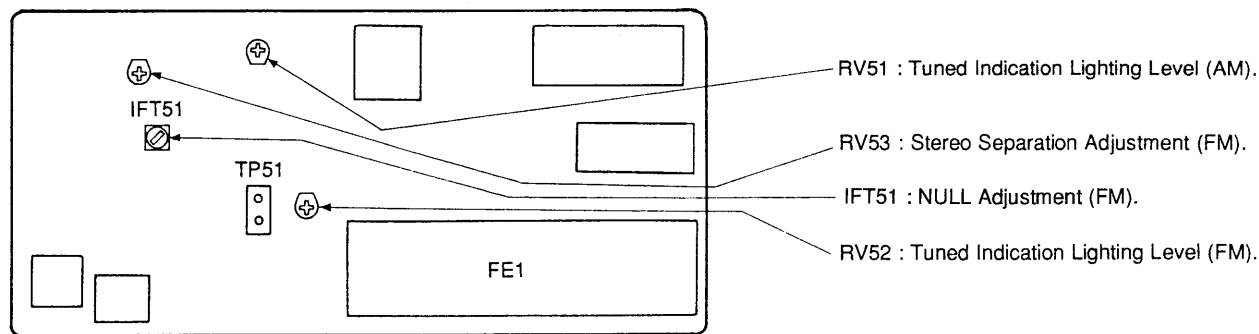


Procedure :

1. Set loop antenna A so that the loop antenna B input level is 55 dBμ/m (0.6m V/m).
2. Tune the set to 999kHz.
3. Adjust RV51 so that the TUNED indicator goes on.

Adjust Location

TCB BOARD — Component Side —

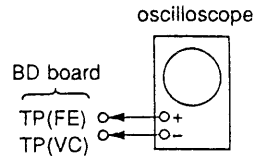


CD SECTION

Note :

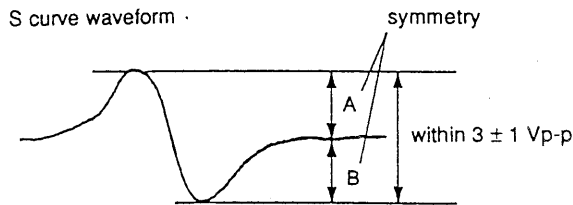
1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than $10M\Omega$ impedance.
4. Clean the object lens using an applicator with neutral detergent when the signal level is low than specified value with the following checks.

S Curve Check



Procedure :

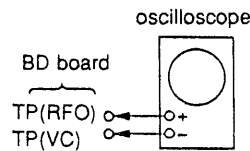
1. Connect oscilloscope to test point TP (FE) on BD board.
2. Connect between test point TP (FEI) and TP (VC) by lead wire.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and turn Power switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out.)
5. Check if the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3 ± 1 Vp-p.



6. After check, remove the lead wire connected in step 2.

Note : • Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
• Set sweep time as long as possible and set the brightness to obtain best waveform.

RF Level Check



Procedure :

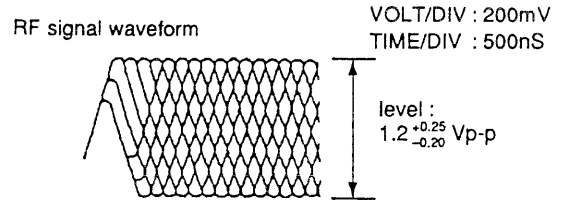
1. Connect oscilloscope to test point TP (RFO) on BD board.
2. Turn Power switch on.

3. Put disc (YEDS-18) in and playback.

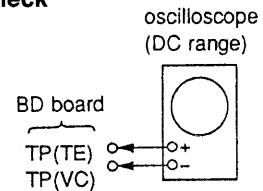
4. Confirm that oscilloscope waveform is clear and check if RF signal level is correct or not.

Note :

A clear RF signal waveform means that the shape “◇” can be clearly distinguished at the center of the waveform.

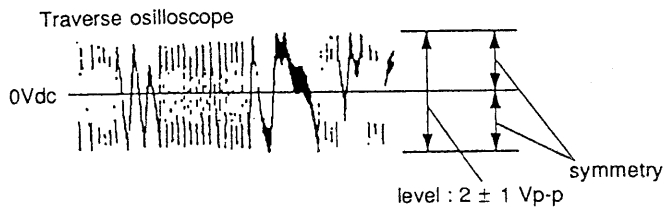


E-F Balance Check



Procedure :

1. Connect test point TP (ADJ) on MAIN board to ground and TP(TEI) to TP (VC) with a lead wire.
2. Connect oscilloscope to test point TP (TE) on BD board.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and playback.
5. Confirm that the oscilloscope waveform is symmetrical on the top and bottom in relation to 0V, and check this level.

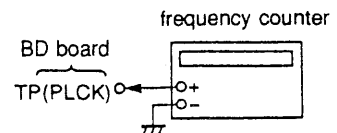


6. Remove the lead wire connected in step 1.

RF PLL Free-run Frequency Check

Procedure :

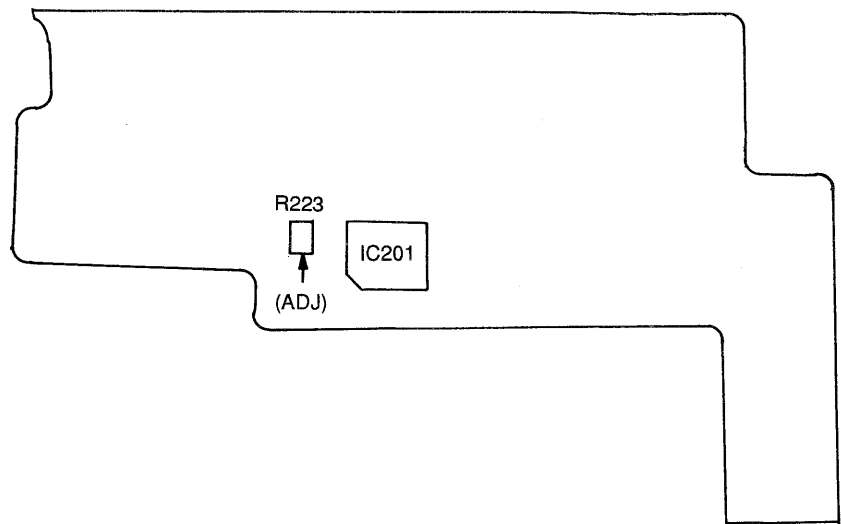
1. Connect frequency counter to test point (PLCK) with lead wire.



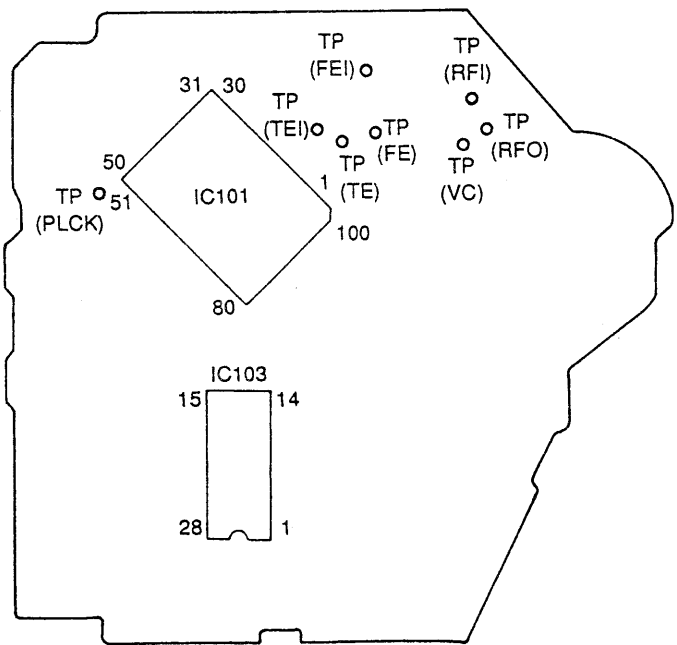
2. Turned Power switch on.
3. Confirm that reading on frequency counter is 4.3218MHz.

Adjustment Location :

[MAIN BOARD] — Conductor Side —



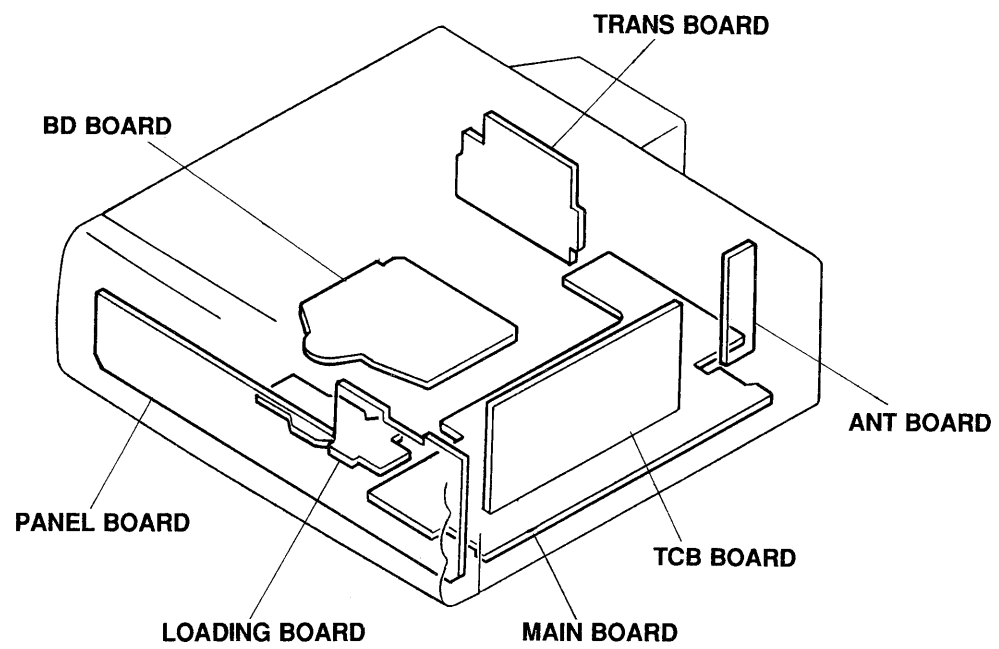
[BD BOARD] — Side B —



SECTION 4

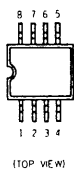
DIAGRAMS

4-1. CIRCUIT BOARD LOCATION

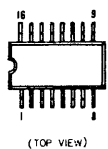


4-2. SEMICONDUCTOR LEAD LAYOUTS

BA6287F
μPC4558G2



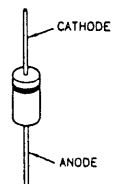
M5290FP
SAA6579T
TC9215F



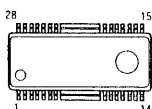
2SB1094-LK
2SD2012-LC



HZS30-2L
10E2



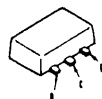
BA6392FP



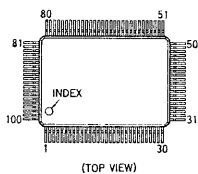
M5F78M07L



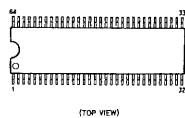
2SB1122-S
2SB798-DL
2SD999-CLCK



CXD2515Q



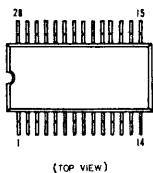
M66004M6FP



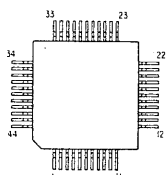
2SA1344
2SC1623-L5L6
2SC3395
2SC3398
2SC3900



CXD2565AM



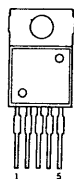
TMP87CH47U-4103



2SK208-GR3



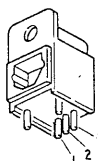
L78MR06



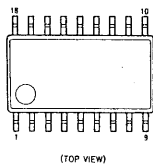
DCB010



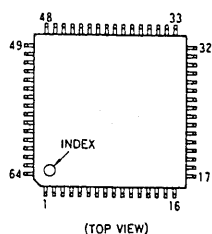
TOTX178



LC7073M



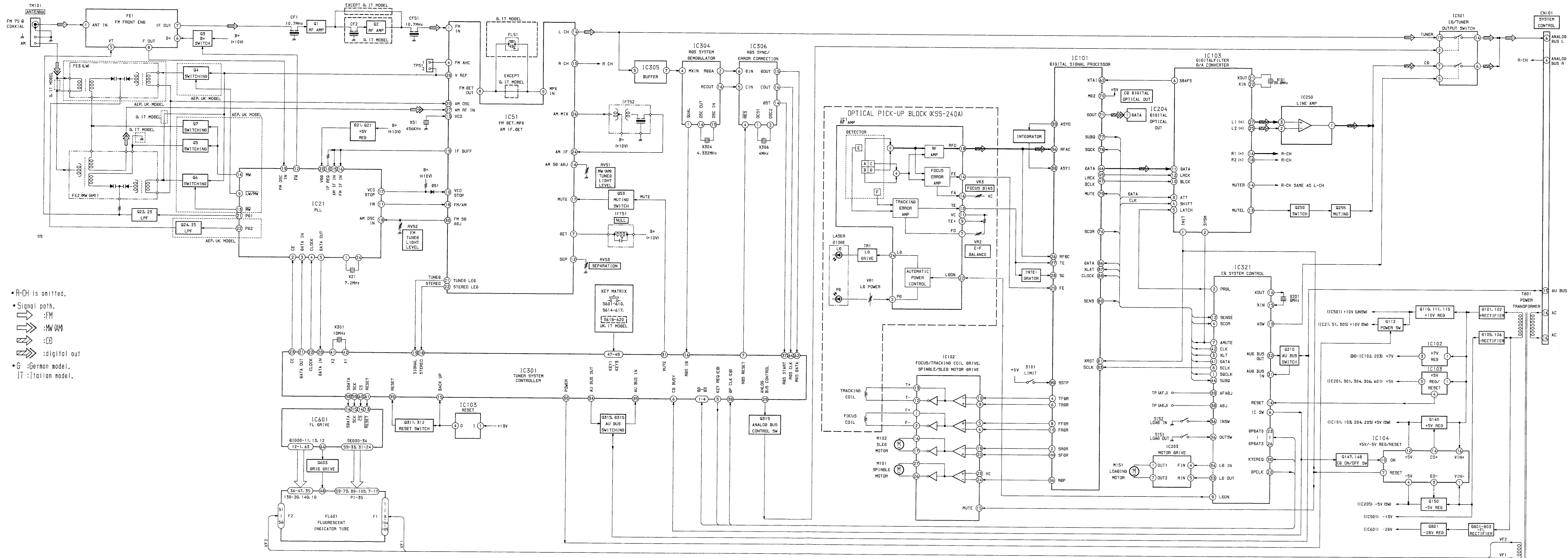
μPD78013GC-593-AB8



UZM10B
UZM11Z
UZM4.7B

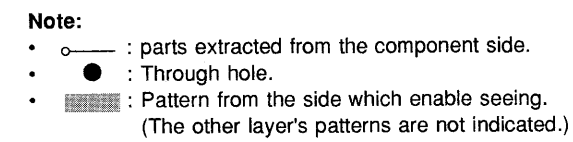


4-3. BLOCK DIAGRAM



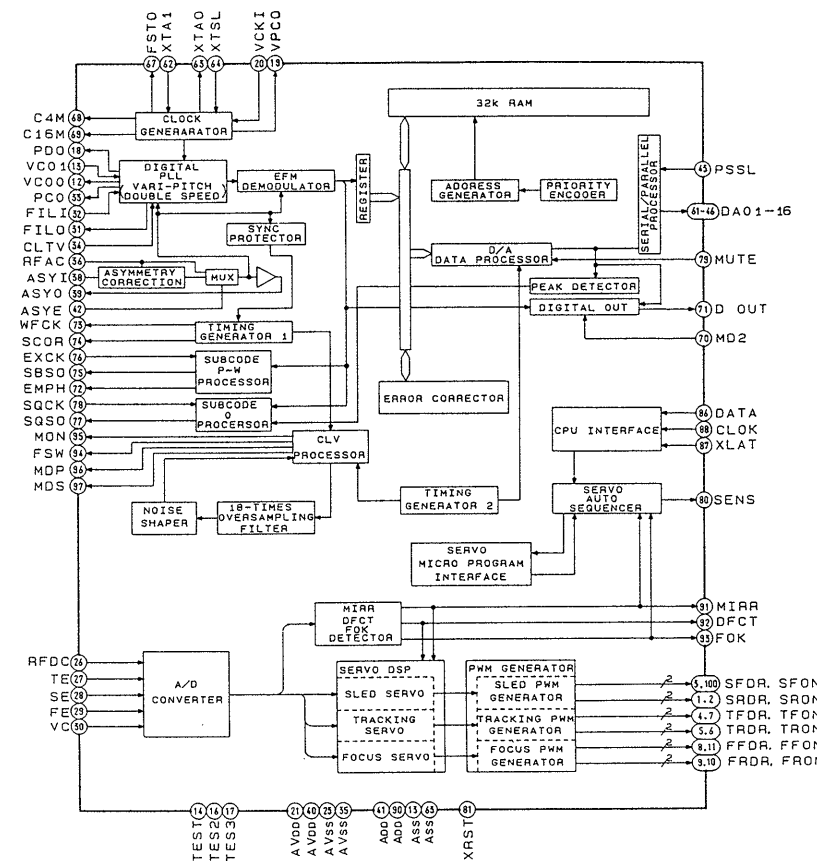
- See page 9 for Circuit Boards Location.
- See page 10 for Semiconductor Lead Layouts.

Ref. No.	Location
IC101	D-3
IC102	C-9
IC103	D-5

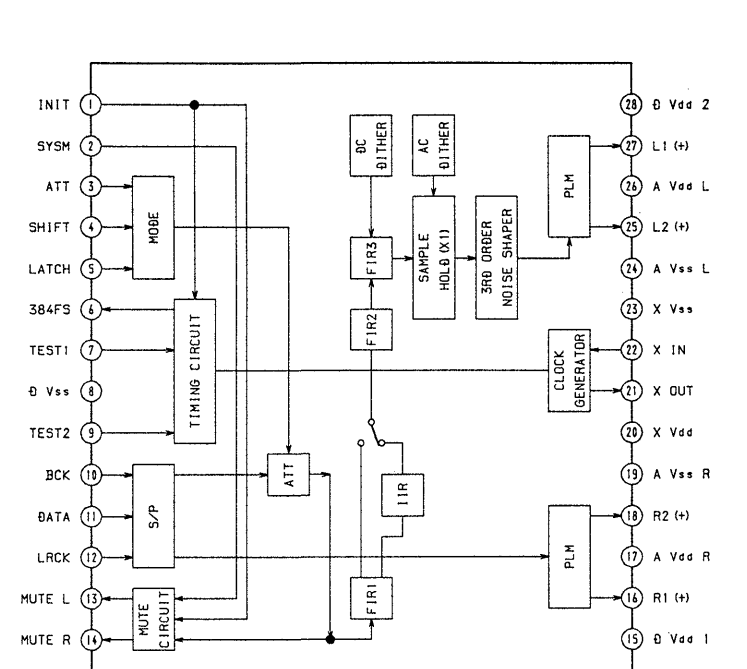


• IC Block Diagrams

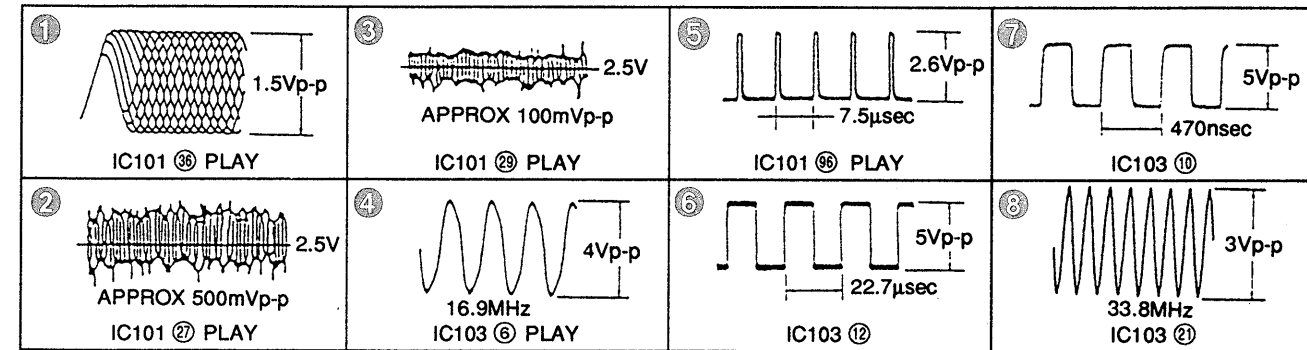
IC101 CXD2515Q



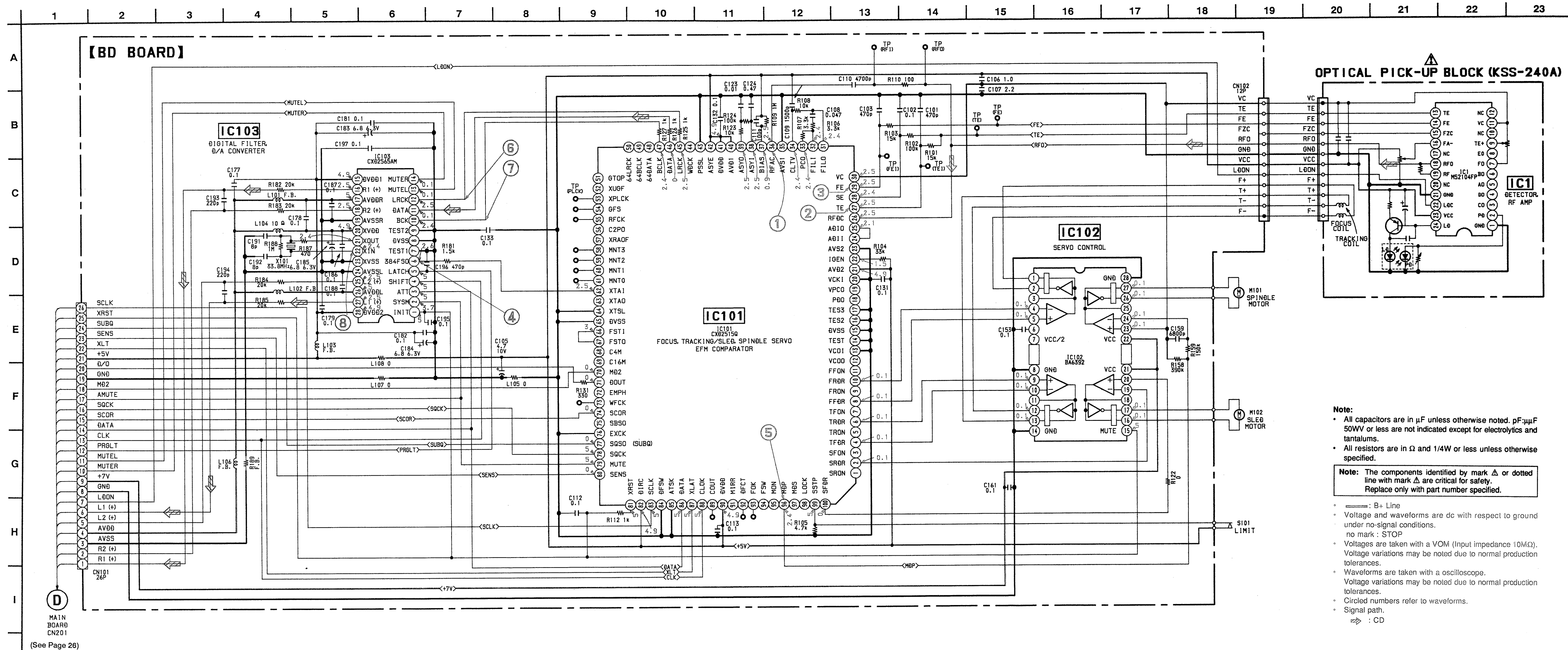
IC103 CXD2565AM



• Waveforms



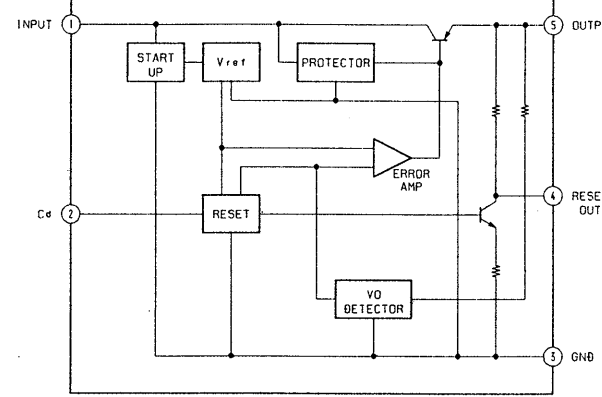
4-5. SCHEMATIC DIAGRAM — CD SECTION —
• See pages 37 to 39 for IC Pin Functions. (IC101) (IC103)



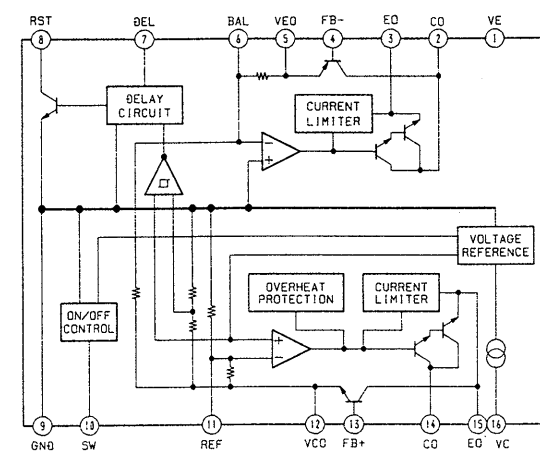
- Note:
- All capacitors are in μF unless otherwise noted. pF μF 50WV or less are not indicated except for electrolytics and tantalums.
 - All resistors are in Ω and $1/4\text{W}$ or less unless otherwise specified.
- Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

- Δ : B+ Line
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- no mark : STOP
- Voltages are taken with a VOM (input impedance $10\text{M}\Omega$). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path

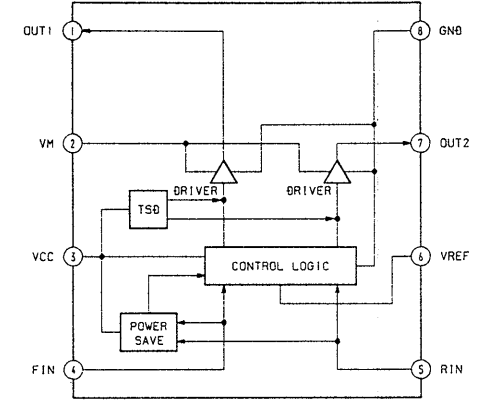
• IC Block Diagrams
IC103 L78MR06



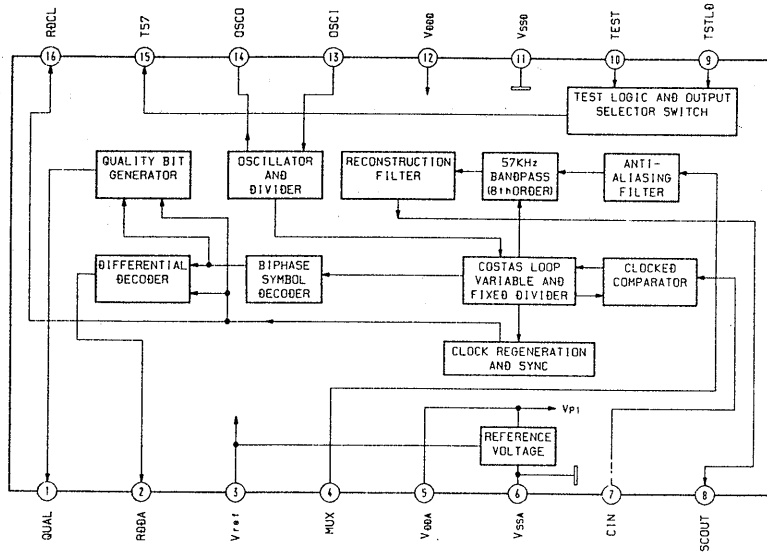
IC104 M5290FP



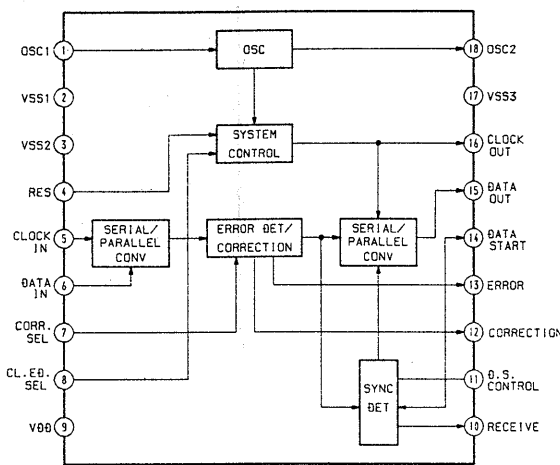
IC203 BA6287F



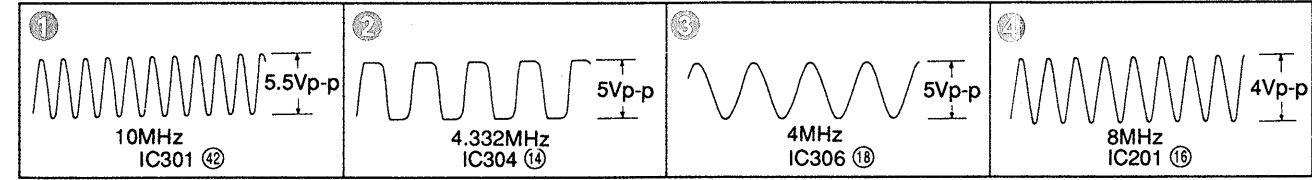
IC304 SAA6579T



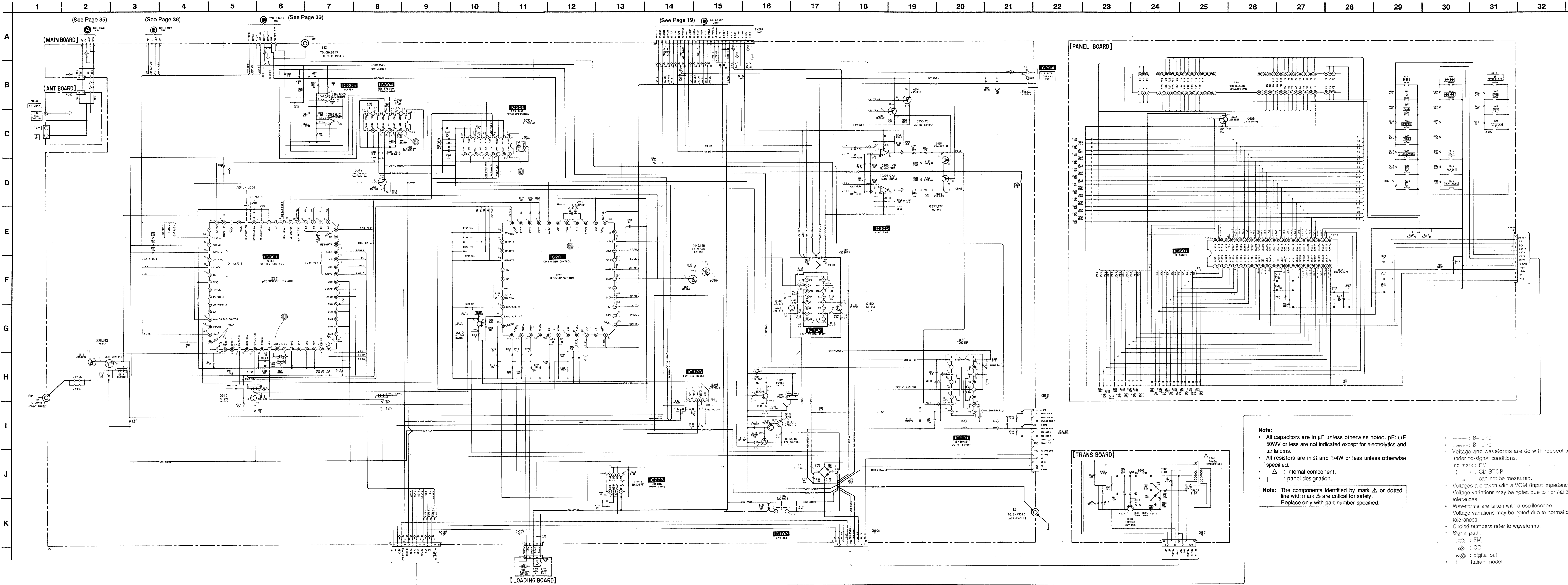
IC306 LC7073M



• Waveforms



4-6. SCHEMATIC DIAGRAM — MAIN SECTION —
• See pages 40 to 42 for IC Pin Functions. (IC201) (IC301)



Note:

- All capacitors are in μF unless otherwise noted. pF : μF
- 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $1/4\text{W}$ or less unless otherwise specified.
- Δ : internal component.
- $\square$: panel designation.

Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

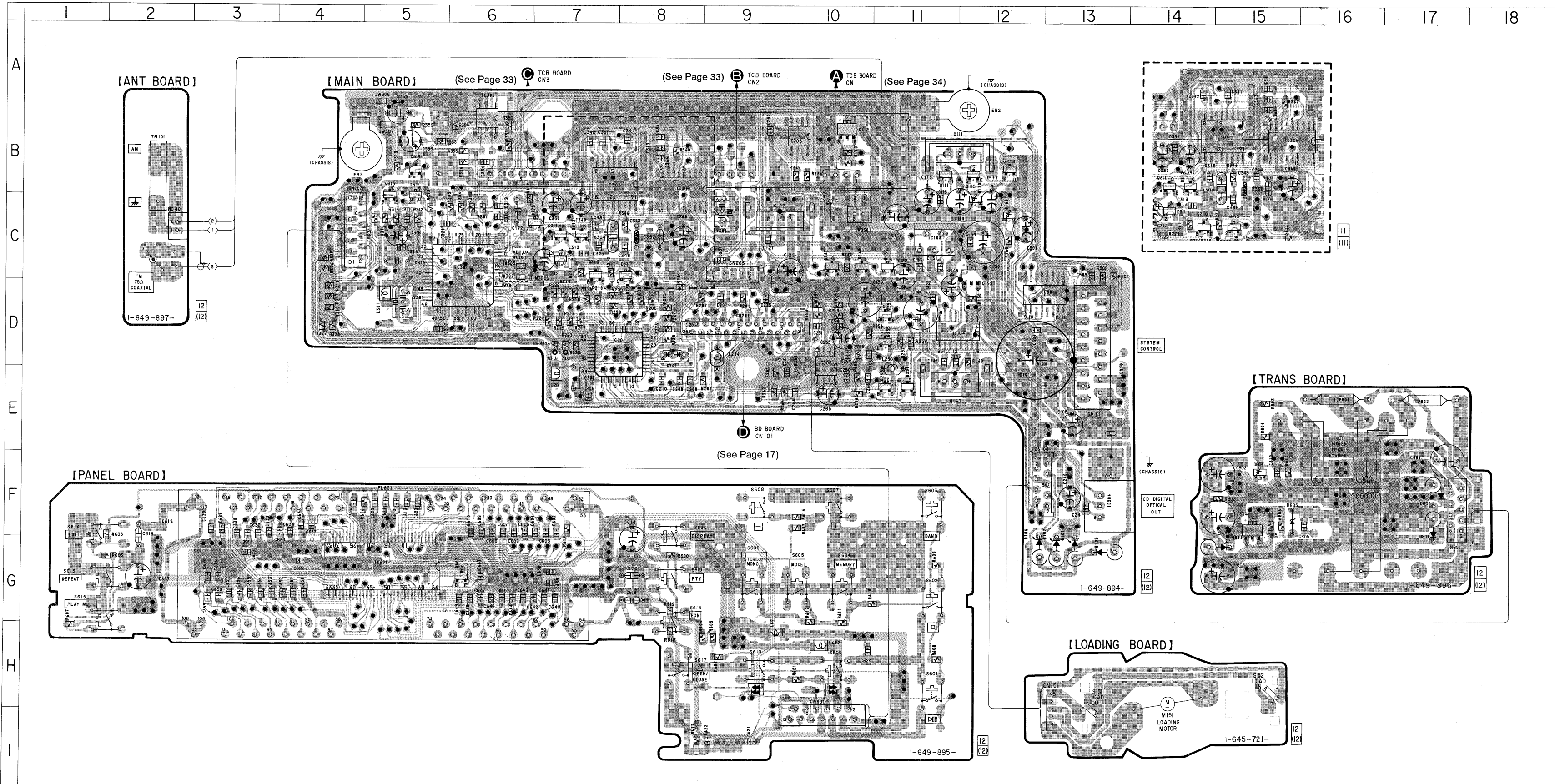
• $\sim$: B+ Line
• $\sim$: B- Line
• Voltage and waveforms are do with respect to ground under no-signal conditions.
• no mark : FM
• () : CD STOP
• * : can not be measured.
• Voltages are taken with a VOM (input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
• Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
• Circled numbers refer to waveforms.
• Signal path.
• $\rightarrow$: FM
• $\rightarrow$: CD
• $\rightarrow$: digital out
• IT : Italian model.

4-7. PRINTED WIRING BOARD — MAIN SECTION —

- See page 9 for Circuit Boards Location.
- See page 10 for Semiconductor Lead Layouts.

• Semiconductor Location

Ref. No.	Location
D101	G-13
D102	G-13
D105	G-13
D106	G-12
D110	C-12
D111	B-11
D135	C-11
D160	C-12
D172	C-7
D210	C-8
D311	C-7
D315	C-5
D801	F-17
D802	F-17
D803	G-15
D804	F-15
D805	F-15
IC102	C-9
IC103	C-11
IC104	D-12
IC201	D-8
IC203	B-10
IC204	F-13
IC205	E-10
IC301	C-6
IC304	B-7
IC305	B-6
IC306	B-8
IC501	D-13
IC601	G-5
Q110	B-12
Q111	B-12
Q112	B-10
Q115	B-12
Q140	E-11
Q147	C-10
Q148	C-10
Q150	C-12
Q210	C-7
Q250	D-11
Q251	E-11
Q255	D-11
Q265	E-11
Q311	C-7
Q312	C-7
Q315	C-5
Q319	B-5
Q603	G-6
Q801	F-15



Note:

- ○ : parts extracted from the component side.
- ● : Through hole.
- ■ : Pattern from the side which enable seeing.
- ■ : Pattern of the rear side.
- IT : Italian model.

4-8. PRINTED WIRING BOARD — TUNER SECTION —

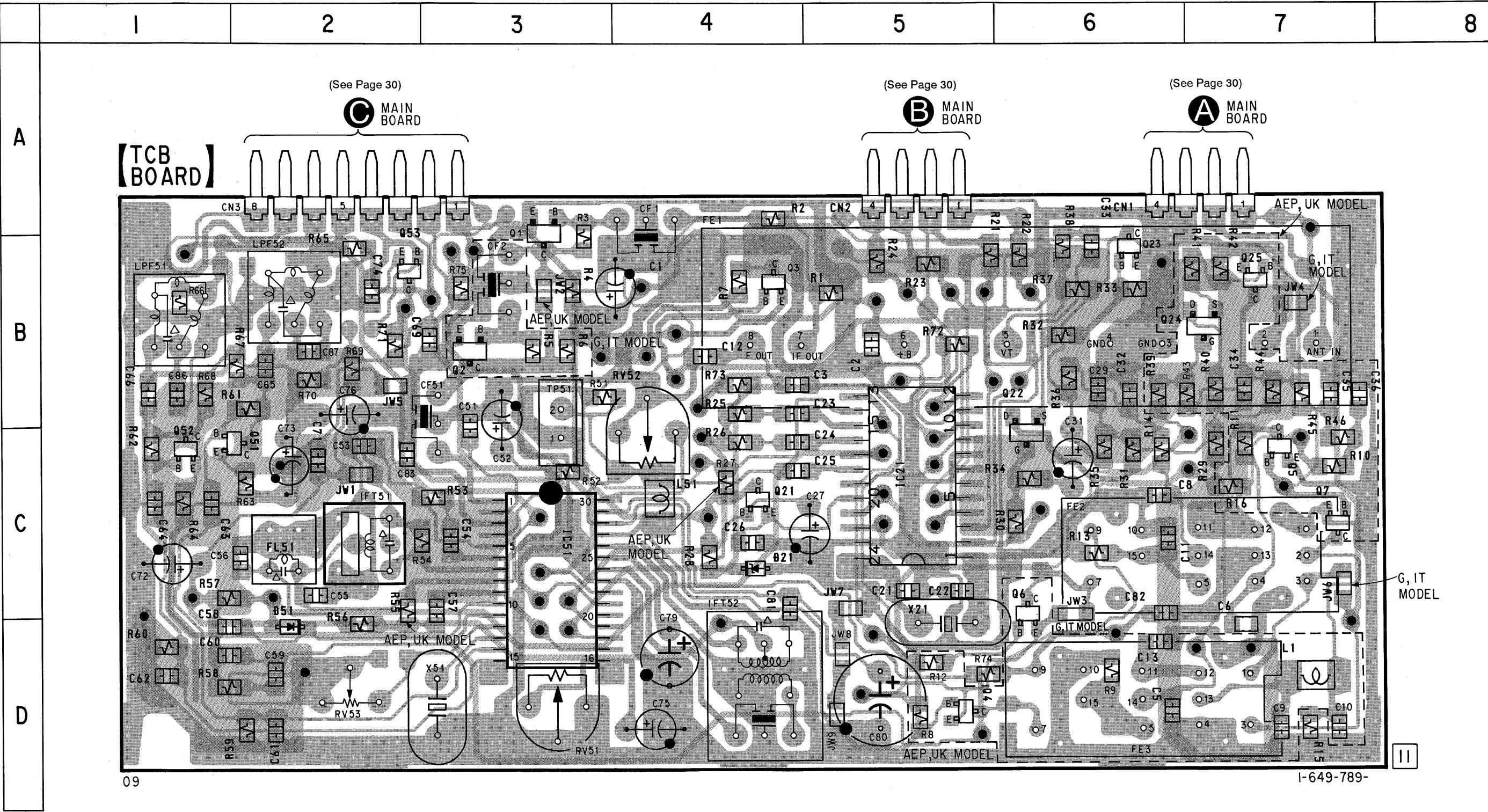
- See page 9 for Circuit Boards Location.
- See page 10 for Semiconductor Lead Layouts.

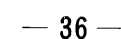
• Semiconductor Location

Ref. No.	Location
D21	C-4
D51	C-2
IC21	C-5
IC51	C-3
Q1	A-3
Q2	B-3
Q3	B-4
Q4	D-5
Q5	C-7
Q6	C-6
Q7	C-7
Q21	C-4
Q22	B-6
Q23	B-6
Q24	B-6
Q25	B-7
Q51	C-2
Q52	C-1
Q53	B-2

Note:

- : parts extracted from the component side.
- : Through hole.
- : internal component.
- : Pattern from the side which enable seeing.
- : Pattern of the rear side.
- G : German model.
- IT : Italian model.





4-10. IC PIN FUNCTIONS

• IC101 Digital Signal Processor, CLV Servo (CXD2515Q)

Pin No.	Pin Name	I/O	Function
1	SRON	O	Sled drive output
2	SRDR	O	Sled drive output
3	SFON	O	Sled drive output
4	TFDR	O	Tracking drive output
5	TRON	O	Tracking drive output
6	TRDR	O	Tracking drive output
7	TFON	O	Tracking drive output
8	FFDR	O	Focus drive output
9	FRON	O	Focus drive output
10	FRDR	O	Focus drive output
11	FFON	O	Focus drive output
12	VCOO	O	VCO output for analog EFM PLL
13	VCOI	I	VCO output for analog EFM PLL
14	TEST	I	TEST pin connected normally to GND
15	DVss	—	Digital GND
16	TES2	I	TEST pin connected normally to GND
17	TES3	I	TEST pin connected normally to GND
18	PDO	O	Charge-pump output for analog EFM PLL
19	VPCO	O	Charge-pump output for variable pitch PLL
20	VCKI	I	Clock input from variable pitch external VCO
21	AVD2	—	Analog power supply
22	IGEN	I	Power supply pin for operational amplifiers
23	AVS2	—	Analog GND
24	ADII	I	Input pin for A/D converter
25	ADIO	O	Operational amplifier output pin
26	RFDC	I	RF signal input
27	TE	I	Tracking error signal input
28	SE	I	Sled error signal input
29	FE	I	Focus error signal input
30	VC	I	Center voltage input pin
31	FILO	O	Filter output for master PLL
32	FILI	I	Filter input for master PLL
33	PCO	O	Charge-pump output for master PLL
34	CLTV	I	Control voltage input for master VCO
35	AVS1	—	Analog GND
36	RFAC	I	EFM signal input
37	BIAS	I	Asymmetry circuit constant current input
38	ASYI	I	Asymmetry compare voltage input
39	ASYO	O	EFM full swing output
40	AVD1	—	Analog power supply

Pin No.	Pin Name	I/O	Function
41	DVDD	—	Digital power supply
42	ASYE	I	Asymmetry circuit ON/OFF
43	PSSL	I	Audio data output mode selection input
44	WDCK	O	48-bit slot D/A interface. Word clock
45	LRCK	O	48-bit slot D/A interface. LR clock
46	DATA	O	DA 16 output when PSSL=1. 48-bit slot serial data when PSSL=0
47	BCLK	O	DA 15 output when PSSL=1. 48-bit slot data when PSSL=0
48	64DATA	O	DA 14 output when PSSL=1. 64-bit slot data when PSSL=0
49	64BCLK	O	DA 13 output when PSSL=1. 64-bit slot data when PSSL=0
50	64LRCK	O	DA 12 output when PSSL=1. 64-bit slot data when PSSL=0
51	GTOP	O	DA 11 output when PSSL=1. GTOP output when PSSL=0
52	XUGF	O	DA 10 output when PSSL=1. XUGF output when PSSL=0
53	XPLCK	O	DA 09 output when PSSL=1. XPLCK output when PSSL=0
54	GFS	O	DA 08 output when PSSL=1. GFS output when PSSL=0
55	PFCK	O	DA 07 output when PSSL=1. RFCK output when PSSL=0
56	C2PO	O	DA 06 output when PSSL=1. C2PO output when PSSL=0
57	XRA0F	O	DA 05 output when PSSL=1. XRA0F output when PSSL=0
58	MNT3	O	DA 04 output when PSSL=1. MNT3 output when PSSL=0
59	MNT2	O	DA 03 output when PSSL=1. MNT2 output when PSSL=0
60	MNT1	O	DA 02 output when PSSL=1. MNT1 output when PSSL=0
61	MNT0	O	DA 01 output when PSSL=1. MNT0 output when PSSL=0
62	XTAI	I	X'tal oscillator circuit input
63	XTAO	O	X'tal oscillator circuit output
64	XTSL	I	X'tal selection input pin
65	DVss	—	Digital GND
66	FSTI	I	2/3 divider output of pins 62, 63
67	FSTO	O	2/3 divider output of pins 62, 63
68	C4M	O	4.2336 MHz output
69	C16M	O	16.9344 MHz output
70	MD2	I	Digital-out ON/OFF control pin
71	DOUT	O	Digital-out output pin
72	EMPH	O	Playback disc output in emphasis mode
73	WFCK	O	WFCK output
74	SCOR	O	Sub-code sync output
75	SBSO	O	Sub-P through Sub-W serial output
76	EXCK	I	Clock input for SBS0 read-out
77	SUBQ	O	Sub-Q 80-bit output
78	SQCK	I	Clock input for SQS0 read-out
79	MUTE	I	Muting selection pin
80	SENS	O	SENS output
81	XRST	I	System reset
82	DIRC	I	Used in 1-track jump mode
83	SCLK	I	SENS serial data read-out clock
84	DFSW	I	DFCT selection pin
85	ATSK	I	Input pin for anti-shock

Pin No.	Pin Name	I/O	Function
86	DATA	I	Serial data input, supplied from CPU
87	XLAT	I	Latch input, supplied from CPU
88	CLOCK	I	Serial data transfer clock input, supplied from CPU
89	COUT	O	Numbers of track counted signal output
90	DVDD	—	Digital power supply
91	MIRR	O	Mirror signal output
92	DFCT	O	Defect signal output
93	FOK	O	Focus OK output
94	FSW	O	Output to select spindle motor output filter
95	MON	O	Output to control ON/OFF of spindle motor
96	MDP	O	Output to control spindle motor servo
97	MDS	O	Output to control spindle motor servo
98	LOCK	O	GFS is sampled by 460 Hz. H when GFS is H
99	SSTP	I	Input signal to detect disc inner most track
100	SFDR	O	Sled drive output

• IC103 Digital Filter, D/A Converter (CXD2565AM)

Pin No.	Pin Name	I/O	Function
1	INIT	I	Re-synchronizing at rise-up edge of this signal
2	SYSM	—	System muting input
3	ATT	I	Attenuation data input
4	SHIFT	I	Shift clock input
5	LATCH	I	Latch clock input
6	384FSO	O	384fs clock output
7	TEST1	—	Test pin. Fixed to "L" level during normal operation
8	DVss	—	Digital GND
9	TEST2	—	Test pin. Fixed to "L" level during normal operation
10	BCK	I	BCK input
11	DATA	I	Data input
12	LRCK	I	LRCK input
13	MUTEL	O	L-CH mute flag
14	MUTER	O	R-CH mute flag
15	DVDD1	—	Digital power supply
16	R1 (+)	O	R-ch PLM output-1 (positive phase)
17	AVDDR	—	L-ch analog power supply
18	R2 (+)	O	R-ch PLM output-2 (positive phase)
19	AVssR	—	L-ch analog GND
20	XVDD	—	Master clock power supply
21	XOUT	O	X'tal oscillator output (33.8 MHz)
22	XIN	I	X'tal oscillator input (33.8 MHz)
23	XVss	—	Master clock GND
24	AVssL	—	L-ch analog GND
25	L2 (+)	O	L-ch PLM output-2 (positive phase)
26	AVDDL	—	L-ch analog power supply
27	L1 (+)	O	L-ch PLM output-1 (positive phase)
28	DVDD2	—	Digital power supply

• IC201 CD System Controller (TMP87CH47U-4103)

Pin No.	Pin Name	I/O	Function
1	SQCLK	O	Sub-code Q data read clock output to IC101 (CXD2515Q).
2	PRGL	O	Latch output to IC103 (digital filter).
3	XLT	O	Serial data latch output to IC101 (CXD2515Q).
4	SCOR	I	Sub-code sync S0+S1 detection input from IC101 (CXD2515Q).
5	NC	—	Not used.
6	ICSW	I/O	CD power supply control flag. OFF: 0 output ON: Input (High impedance condition)
7	AMUTE	O	Muting control output. "High": Mute
8	SCLK	I	SENS serial data read-out clock.
9	LDON	O	Optical pickup laser diode on/off selection output. "High": ON
10	ASW	O	Analog bus control signal output to IC501 (TC9215F).
11	NC	—	Not used.
12	SENSE	I	SENSE input from IC101 (CXD2515Q).
13	TEST	I	Fixed at "L".
14	RESET	I	System reset input.
15	XIN	I	External clock input (8.0 MHz).
16	XOUT	O	External clock output (8.0 MHz).
17	Vss	—	GND pin.
18	VAREF	I	Reference voltage +5V for A/D convertor.
19	KEY0	—	} NC
20	KEY1	—	
21	KEY2	—	
22	DPCLK	O	Display data transmission clock output to IC301 (μ PD78013GC-593-AB8).
23	DPDAT0	I/O	} Key data input and display data output with IC301 (μ PD78013GC-593-AB8).
24	DPDAT1	I/O	
25	DPDAT2	I/O	
26	DPDAT3	I/O	
27	NC	—	} Not used.
28	NC	—	
29	NC	—	
30	KEYREQ	I	Key code input trigger from IC301 (μ PD78013GC-593-AB8). (Four falling edges for each key)
31	AUD BUS IN	I	Audio bus input.
32	AUD BUS OUT	O	Audio bus output pin.
33	LODOUT	O	Output rotating M151 (loading motor) in loading-out direction. *1
34	LODIN	O	Output rotating M151 (loading motor) in loading-in direction. *1
35	OUTSW	I	S151 (loading-out switch) input.
36	INSW	I	S152 (loading-in switch) input.
37	AFUNC	I	Auto function input.
38	ADJ	I	CD test mode input 1. Continues rotating the spindle motor even if the GFS check is not performed or no frame sync is output in PLAY, PAUSE, SEARCH at "Low".
39	AFADJ	I	CD test mode input 2.
40	VDD	—	Power supply pin (+5V).
41	DATA	O	Serial data output to IC101 (CXD2515Q), IC103 (CXD2565AM).
42	CLK	O	Serial data transmission clock output to IC101 (CXD2515Q), IC103 (CXD2565AM).
43	NC	—	Not used.
44	SUBQ	I	Sub-code Q data input from IC101 (CXD2515Q).

* 1 Loading motor control

	IN	OUT	BRAKE
LOG OUT ⑥	L	H	H
LOG IN ⑤	H	L	H

• IC301 Tuner System Controller (μ PD78013GC-593-AB8)

Pin No.	Pin Name	I/O	Function
1	D0	I/O	Data input/output terminal with IC201 (CD system controller).
2	D1	I/O	
3	D2	I/O	
4	D3	I/O	
5	KEY REQ (CD)	O	Key data output timing. (CD)
6	CD BUSY NPUT	I	CD condition input.
7	RDS RESET	O	Reset output to IC306 (RDS error correction).
8	NC	—	Not used in this unit (Open).
9	Vss	—	GND pin.
10	Destination	I	Destination determination input.
11	Destination	I	
12	Destination	I	
13	IF+50K	I	IF OFFSET +50 kHz.
14	IF-50K	I	IF OFFSET -50 kHz.
15	BACK UP	I	Detection of power failure.
16	RDS ID	I	Not used in this unit (Open).
17		—	
18	STEREO	I	STEREO input.
19	SIGNAL	I	SIGNAL input.
20	DATA INPUT	I	Data input from IC21 (PLL).
21	DATA OUTPUT	O	Data output to IC21 (PLL).
22	CLOCK	O	CLOCK output to IC21 (PLL).
23	CE	O	CE output to IC21 (PLL).
24	Vss	—	GND pin.
25	IF OK	—	Not used in this unit (Open).
26	FM/AM (J)	—	
27	AM MONO (J)	—	
28	NC	—	
29	Analog bus control	O	Analog bus control output of IC501 (Analog switch).
30	POWER	O	Power output to tuner. "Low": ON "High": OFF
31	MUTE	O	Muting output to tuner. "Low": ON "High": OFF
32	CLOCK X24C	—	Not used in this unit (Open).
33	DATA X24C	—	
34	AU BUS OUT	O	Audio bus output.
35	RESET	I	Reset input.
36	AU BUS IN	I	Audio bus input.
37	RDS START	I	RDS error correction data timing input.
38	DPCLK (CD)	I	CD display data timing input from IC201 (CD system controller).
39	DPSYNC	—	Not used in this unit (Open).
40	VDD	—	Power supply pin (+5V).

Pin No.	Pin Name	I/O	Function
41	X2	O	Main clock.
42	X1	I	Main clock (10 MHz).
43	GND	—	GND pin.
44	XT2	—	Not used in this unit (Open).
45	GND	—	} GND pin.
46	GND	—	
47	Key input	I	} Key input.
48	Key input	I	
49	Key input	I	
50	GND	I	} GND pin.
51	GND	—	
52	GND	—	
53	GND	—	
54	GND	—	
55	AVDD	—	} Power supply pin (+5V).
56	AVREF	—	
57	GND	—	GND pin.
58	SDATA	O	Data output to IC601 (FL driver).
59	SCK	O	CLOCK output to IC601 (FL driver).
60	CS	O	CS output to IC601 (FL driver).
61	RESET	O	Reset output to IC601 (FL driver).
62	RDS DATA	I	Data input from IC306 (RDS error correction).
63	NC	—	Not used in this unit (Open).
64	RDS CLK	I	Clock input from IC306 (RDS error correction).

SECTION 5 EXPLODED VIEWS

NOTE:

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- Color Indication of Appearance Parts Example:
KNOB, BALANCE (WHITE) ... (RED)

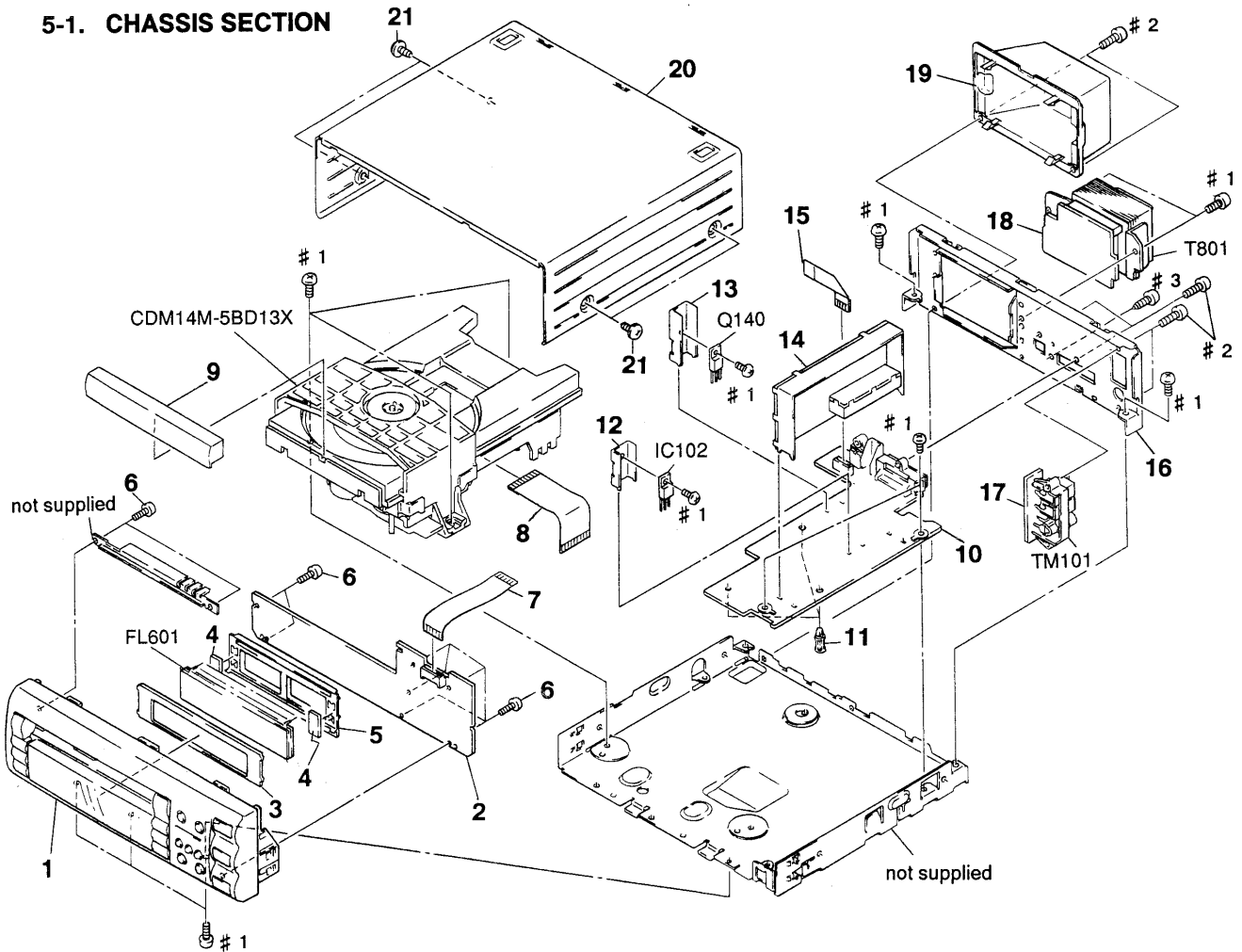
↑ ↑
Parts color Cabinet's color

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

The components identified by mark or dotted line with mark are critical for safety.
Replace only with part number specified.

- G : German model
- IT : Italian model

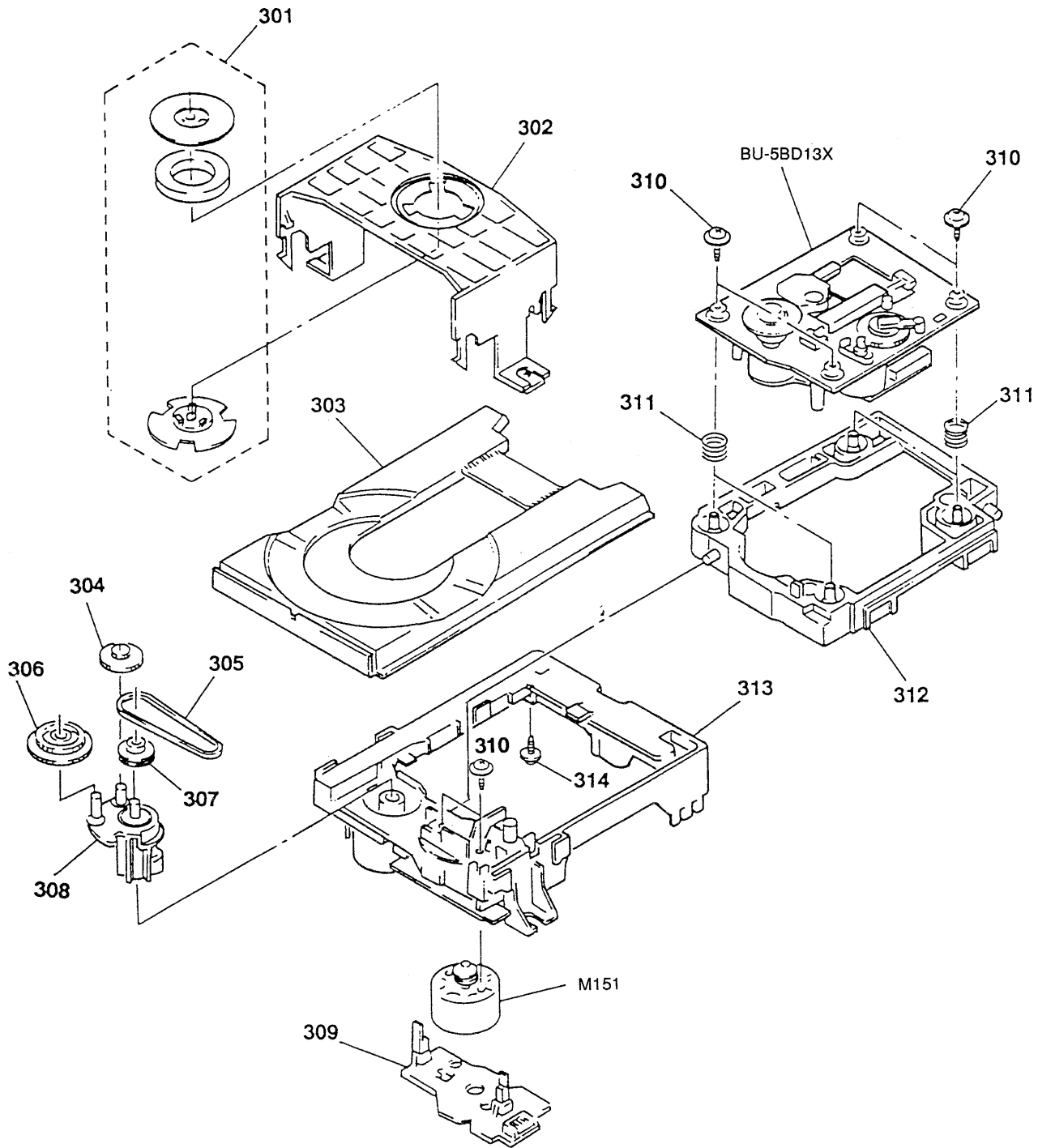
5-1. CHASSIS SECTION



Ref. No.	Part No.	Description
1	X-4944-595-1	PANEL ASSY, FRONT
* 2	A-4365-769-A	PANEL BOARD, COMPLETE
3	4-961-884-01	PLATE, BLIND
* 4	4-932-810-11	CUSHION (FL)
* 5	4-954-187-11	HOLDER (FL)
6	4-951-620-01	SCREW (2.6X8), +BVTP
7	1-751-981-11	WIRE (FLAT TYPE) (13 CORE)
8	1-765-175-11	WIRE (FLAT TYPE) (26 CORE)
9	4-961-885-01	PANEL (LOADING)
* 10	A-4365-768-A	MAIN BOARD, COMPLETE (G)
* 10	A-4369-509-A	MAIN BOARD, COMPLETE (AEP)
* 10	A-4369-510-A	MAIN BOARD, COMPLETE (IT)
* 10	A-4369-511-A	MAIN BOARD, COMPLETE (UK)
* 11	3-669-610-00	SPACER
* 12	3-309-144-21	HEATSINK
* 13	4-941-237-01	HEATSINK (AEP, UK, G)

Ref. No.	Part No.	Description
* 13	4-941-237-11	HEATSINK (IT)
14	A-4303-459-A	TBC BOARD, COMPLETE (AEP, UK)
14	A-4303-460-A	TBC BOARD, COMPLETE (G, IT)
15	1-751-980-11	WIRE (FLAT TYPE) (9 CORE)
* 16	4-961-887-11	PANEL (HCD), BACK (AEP)
* 16	4-961-887-21	PANEL (HCD), BACK (G)
* 16	4-961-887-31	PANEL (HCD), BACK (IT)
* 16	4-961-887-41	PANEL (HCD), BACK (UK)
* 17	1-649-897-11	ANT BOARD
* 18	1-649-896-11	TRANS BOARD
* 19	4-961-886-11	COVER (TRANSFORMER)
20	4-961-481-41	CASE
21	3-363-099-21	SCREW (CASE 3 TP2)
FL601	1-517-241-11	INDICATOR TUBE, FLUORESCENT
T801	1-426-704-11	TRANSFORMER, POWER
* TM101	1-537-288-11	TERMINAL BOARD, ANTENNA (PAL)

5-2. CD MECHANISM SECTION (CDM14M-5BD13X)



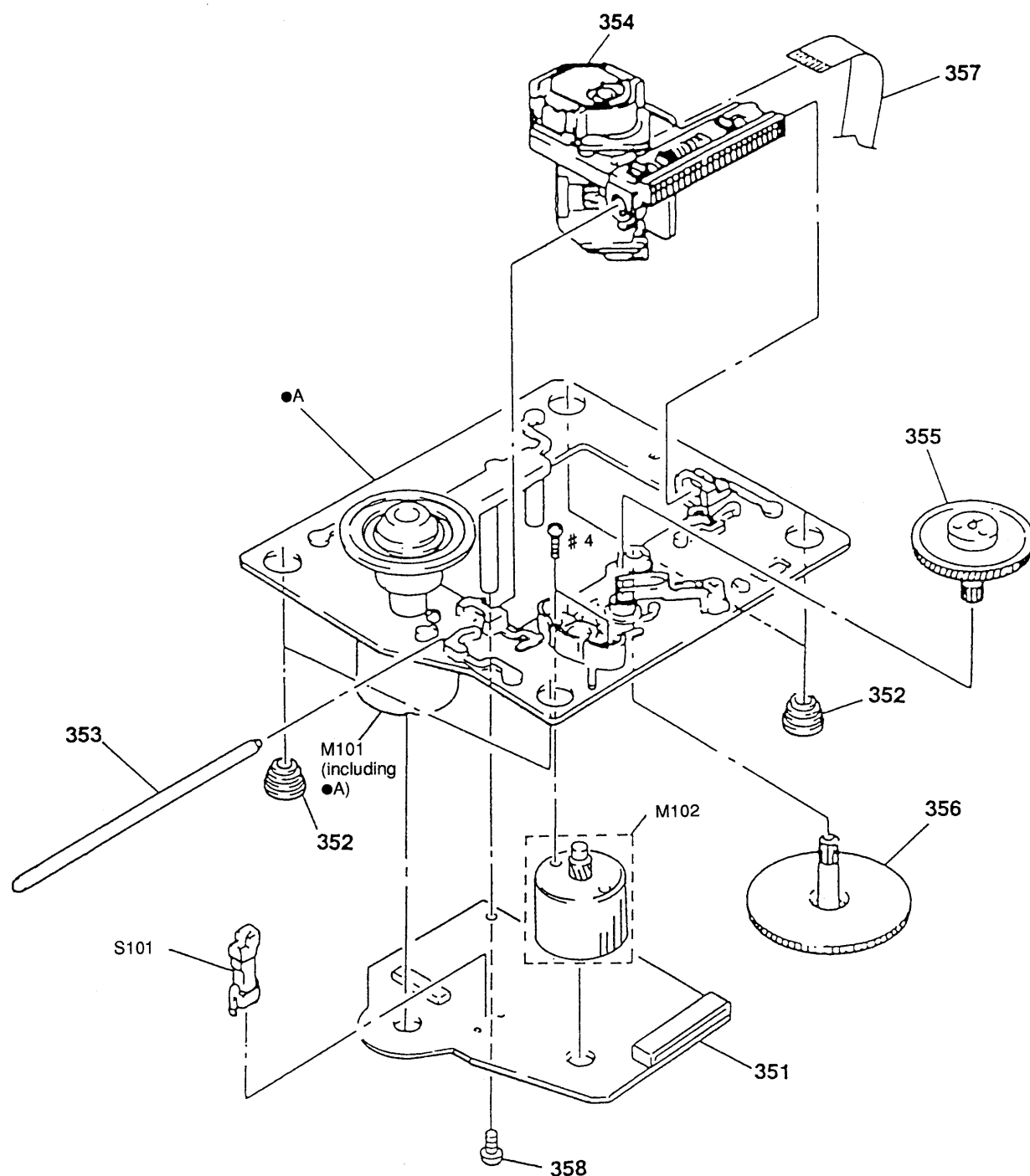
Ref.No.	Part No.	Description
* 301	1-452-538-11	MAGNET
302	4-933-110-01	HOLDER (MG)
303	4-961-487-01	TABLE, DISK
304	4-927-628-01	GEAR (C)
305	4-927-649-01	BELT
306	4-933-107-01	GEAR (PL)
307	4-927-651-01	PULLEY (S)
308	4-933-109-01	CAM

Remark

Ref.No.	Part No.	Description
* 309	1-645-721-11	LOADING BOARD
310	4-933-134-01	SCREW (+PTPWH M2. 6X6)
311	4-959-996-01	SPRING (932), COMPRESSION
312	4-933-129-01	HOLDER (BU)
313	4-933-111-01	CHASSIS (MD)
* 314	4-917-583-21	BRACKET, YOKE
M151	A-4604-363-A	MOTOR (L) ASSY (LOADING)

Remark

5-3. BASE UNIT SECTION (BU-5BD13X)



The components identified by mark $\triangle$ or dotted line with mark $\triangle$ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description
* 351	A-4673-034-A	BD BOARD, COMPLETE
352	4-951-940-01	INSULATOR (BU)
353	4-917-565-01	SHAFT, SLED
$\triangle$ 354	8-848-144-11	OPTICAL PICK-UP BLOCK (KSS-240A)
355	4-917-567-01	GEAR (M)
356	4-917-564-01	GEAR (P), FLATNESS

Remark	Ref. No.	Part No.	Description	Remark
	357	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
	358	4-951-620-01	SCREW (2.6X8), +BVTP	
	M101	X-4917-523-3	MOTOR ASSY (SPINDLE)	
	M102	X-4917-504-1	MOTOR ASSY (SLED)	
	S101	1-572-085-11	SWITCH, LEAF (LIMIT)	

ANT **BD**

ELECTRICAL PARTS LIST

NOTE:

The components identified by mark  or dotted line with mark  are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
 - Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
 - -XX, -X mean standardized parts, so they may have some difference from the original one.
 - Color Indication of Appearance Parts Example:
 KNOB, BALANCE (WHITE) . . . (RED)
 ↑ ↑
 Parts color Cabinet's color
 - Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- RESISTORS
 All resistors are in ohms
 METAL: Metal-film resistor
 METAL OXIDE: Metal Oxide-film resistor
 F : nonflammable
 - SEMICONDUCTORS
 In each case, u: μ , for example:
 uA...: μ A..., uPA...: μ PA..., uPB...: μ PB...,
 uPC...: μ PC..., uPD...: μ PD...
 - CAPACITORS
 uF : μ F
 - COILS
 uH : μ H
 - G : German model
 IT : Italian model

Ref. No.	Part No.	Description				Remark	Ref. No.	Part No.	Description				Remark
*	1-649-897-11	ANT BOARD					C191	1-163-091-00	CERAMIC CHIP	8PF			50V
		*****					C192	1-163-091-00	CERAMIC CHIP	8PF			50V
		< TERMINAL >					C193	1-163-125-00	CERAMIC CHIP	220PF	5%		50V
							C194	1-163-125-00	CERAMIC CHIP	220PF	5%		50V
* TM101	1-537-288-11	TERMINAL BOARD, ANTENNA (PAL)					C195	1-163-038-00	CERAMIC CHIP	0.1uF			25V
							C196	1-163-005-11	CERAMIC CHIP	470PF	10%		50V
*****							C197	1-163-038-00	CERAMIC CHIP	0.1uF			25V
*	A-4673-034-A	BD BOARD, COMPLETE					< CONNECTOR >						
		*****					* CN101	1-580-875-11	SOCKET, CONNECTOR (SMT)	26P			
		< CAPACITOR >					CN102	1-580-866-11	SOCKET, CONNECTOR (SMT)	12P			
							< IC >						
C101	1-163-005-11	CERAMIC CHIP	470PF	10%	50V		IC101	8-752-361-90	IC	CXD2515Q			
C102	1-163-038-00	CERAMIC CHIP	0.1uF		25V		IC102	8-759-176-09	IC	BA6392FP			
C103	1-163-005-11	CERAMIC CHIP	470PF	10%	50V		IC103	8-752-367-61	IC	CXD2565AM			
C105	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V		< COIL >						
C106	1-164-346-11	CERAMIC CHIP	1uF		16V		L101	1-414-234-11	INDUCTOR, FERRITE BEAD				
							L102	1-414-234-11	INDUCTOR, FERRITE BEAD				
C107	1-164-505-11	CERAMIC CHIP	2.2uF		16V		L103	1-414-234-11	INDUCTOR, FERRITE BEAD				
C108	1-163-035-00	CERAMIC CHIP	0.047uF		50V		L104	1-216-001-00	METAL CHIP	10	5%		1/10W
C109	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V		L105	1-216-295-00	METAL CHIP	0	5%		1/10W
C110	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V								
C111	1-163-251-11	CERAMIC CHIP	100PF	5%	50V		L106	1-414-234-11	INDUCTOR, FERRITE BEAD				
							L107	1-216-295-00	METAL CHIP	0	5%		1/10W
C112	1-163-038-00	CERAMIC CHIP	0.1uF		25V		L108	1-216-295-00	METAL CHIP	0	5%		1/10W
C113	1-163-038-00	CERAMIC CHIP	0.1uF		25V		< RESISTOR >						
C123	1-164-232-11	CERAMIC CHIP	0.01uF		50V		R101	1-216-077-00	METAL CHIP	15K	5%		1/10W
C124	1-164-005-11	CERAMIC CHIP	0.47uF		25V		R102	1-216-097-00	METAL CHIP	100K	5%		1/10W
C131	1-163-038-00	CERAMIC CHIP	0.1uF		25V		R103	1-216-077-00	METAL CHIP	15K	5%		1/10W
							R104	1-216-085-00	METAL CHIP	33K	5%		1/10W
C132	1-163-038-00	CERAMIC CHIP	0.1uF		25V		R105	1-216-065-00	METAL CHIP	4.7K	5%		1/10W
C133	1-163-038-00	CERAMIC CHIP	0.1uF		25V								
C153	1-163-038-00	CERAMIC CHIP	0.1uF		25V		R106	1-216-061-00	METAL CHIP	3.3K	5%		1/10W
C159	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V		R107	1-216-061-00	METAL CHIP	3.3K	5%		1/10W
C161	1-163-038-00	CERAMIC CHIP	0.1uF		25V		R108	1-216-073-00	METAL CHIP	10K	5%		1/10W
							R109	1-216-121-00	METAL CHIP	1M	5%		1/10W
C177	1-163-038-00	CERAMIC CHIP	0.1uF		25V		R110	1-216-025-00	METAL CHIP	100	5%		1/10W
C178	1-163-038-00	CERAMIC CHIP	0.1uF		25V								
C179	1-163-038-00	CERAMIC CHIP	0.1uF		25V		R112	1-216-049-00	METAL CHIP	1K	5%		1/10W
C181	1-163-038-00	CERAMIC CHIP	0.1uF		25V		R122	1-216-295-00	METAL CHIP	0	5%		1/10W
C182	1-163-038-00	CERAMIC CHIP	0.1uF		25V		R123	1-216-073-00	METAL CHIP	10K	5%		1/10W
							R124	1-216-097-00	METAL CHIP	100K	5%		1/10W
C183	1-135-156-21	TANTALUM CHIP	6.8uF	10%	10V		R125	1-216-049-00	METAL CHIP	1K	5%		1/10W
C184	1-135-156-21	TANTALUM CHIP	6.8uF	10%	10V								
C185	1-135-156-21	TANTALUM CHIP	6.8uF	10%	10V								
C186	1-163-038-00	CERAMIC CHIP	0.1uF		25V								
C187	1-163-038-00	CERAMIC CHIP	0.1uF		25V								
C188	1-163-038-00	CERAMIC CHIP	0.1uF		25V								

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R126	1-216-049-00	METAL CHIP	1K 5% 1/10W	< CAPACITOR >			
R127	1-216-049-00	METAL CHIP	1K 5% 1/10W	C101	1-128-548-11	ELECT	4700uF 20% 25V
R131	1-216-037-00	METAL CHIP	330 5% 1/10W	C105	1-124-477-11	ELECT	47uF 20% 25V
R158	1-216-111-00	METAL CHIP	390K 5% 1/10W	C112	1-124-477-11	ELECT	47uF 20% 25V
R159	1-216-101-00	METAL CHIP	150K 5% 1/10W	C113	1-126-101-11	ELECT	100uF 20% 16V
R181	1-216-053-00	METAL CHIP	1.5K 5% 1/10W	C114	1-126-101-11	ELECT	100uF 20% 16V
R182	1-216-080-00	METAL CHIP	20K 5% 1/10W	C115	1-126-101-11	ELECT	100uF 20% 16V
R183	1-216-080-00	METAL CHIP	20K 5% 1/10W	C116	1-165-319-11	CERAMIC CHIP	0.1uF 50V
R184	1-216-080-00	METAL CHIP	20K 5% 1/10W	C120	1-126-101-11	ELECT	100uF 20% 16V
R185	1-216-080-00	METAL CHIP	20K 5% 1/10W	C121	1-164-005-11	CERAMIC CHIP	0.47uF 25V
R187	1-216-041-00	METAL CHIP	470 5% 1/10W	C130	1-124-480-11	ELECT	470uF 20% 25V
R188	1-216-121-00	METAL CHIP	1M 5% 1/10W	C131	1-164-346-11	CERAMIC CHIP	1uF 16V
R189	1-414-234-11	INDUCTOR, FERRITE BEAD		C132	1-126-176-11	ELECT	220uF 20% 10V
< SWITCH >				C133	1-164-346-11	CERAMIC CHIP	1uF 16V
S101	1-572-085-11	SWITCH, LEAF (LIMIT)		C134	1-164-346-11	CERAMIC CHIP	1uF 16V
< VIBRATOR >				C140	1-124-472-11	ELECT	470uF 20% 10V
X101	1-579-904-41	VIBRATOR, CRYSTAL (33.8MHz)		C141	1-164-346-11	CERAMIC CHIP	1uF 16V
*****				C142	1-164-161-11	CERAMIC CHIP	0.0022uF 10% 100V
*	1-645-721-11	LOADING BOARD	*****	C143	1-164-232-11	CERAMIC CHIP	0.01uF 50V
< CONNECTOR >				C145	1-124-927-11	ELECT	4.7uF 20% 100V
* CN151	1-568-943-11	PIN, CONNECTOR 5P		C150	1-124-472-11	ELECT	470uF 20% 10V
< MOTOR >				C172	1-125-507-11	CAP, DOUBLE LAYERS	0.22F
M151	A-4604-363-A	MOTOR (L) ASSY (LOADING)		C201	1-165-319-11	CERAMIC CHIP	0.1uF 50V
< SWITCH >				C206	1-164-505-11	CERAMIC CHIP	2.2uF 16V
S151	1-572-086-11	SWITCH, LEAF (LOAD OUT)		C207	1-136-177-00	FILM	1uF 5% 50V
S152	1-572-086-11	SWITCH, LEAF (LOAD IN)		C210	1-165-319-11	CERAMIC CHIP	0.1uF 50V
*****				C230	1-164-232-11	CERAMIC CHIP	0.01uF 50V
*	A-4365-768-A	MAIN BOARD, COMPLETE (G)	*****	C231	1-164-232-11	CERAMIC CHIP	0.01uF 50V
*	A-4369-509-A	MAIN BOARD, COMPLETE (AEP)	*****	C235	1-164-232-11	CERAMIC CHIP	0.01uF 50V
*	A-4369-510-A	MAIN BOARD, COMPLETE (IT)	*****	C240	1-124-907-11	ELECT	10uF 20% 50V
*	A-4369-511-A	MAIN BOARD, COMPLETE (UK)	*****	C241	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V
*	3-309-144-21	HEAT SINK		C250	1-165-319-11	CERAMIC CHIP	0.1uF 50V
*	4-941-237-11	HEAT SINK (IT)		C251	1-163-001-11	CERAMIC CHIP	200PF 5% 50V
*	4-941-237-01	HEAT SINK (AEP, UK, G)		C254	1-163-001-11	CERAMIC CHIP	200PF 5% 50V
	7-682-547-09	SCREW +BVTT 3X6 (S)		C255	1-124-126-00	ELECT	47uF 20% 10V
				C256	1-164-161-11	CERAMIC CHIP	2200PF 10% 50V
				C260	1-165-319-11	CERAMIC CHIP	0.1uF 50V
				C261	1-163-001-11	CERAMIC CHIP	200PF 5% 50V
				C264	1-163-001-11	CERAMIC CHIP	200PF 5% 50V
				C265	1-124-126-00	ELECT	47uF 20% 10V
				C266	1-164-161-11	CERAMIC CHIP	2200PF 10% 50V
				C311	1-164-232-11	CERAMIC CHIP	0.01uF 50V
				C312	1-124-903-11	ELECT	1uF 20% 50V
				C313	1-164-232-11	CERAMIC CHIP	0.01uF 50V
				C315	1-136-177-00	FILM	1uF 5% 50V
				C316	1-164-505-11	CERAMIC CHIP	2.2uF 16V
				C317	1-165-319-11	CERAMIC CHIP	0.1uF 50V
				C318	1-126-101-11	ELECT	100uF 20% 16V
				C321	1-165-319-11	CERAMIC CHIP	0.1uF 50V
				C340	1-124-925-11	ELECT	2.2uF 20% 100V

MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C341	1-163-003-11	CERAMIC CHIP 330PF	10% 50V	IC204	8-749-923-04	IC TOTX178	
C342	1-163-006-11	CERAMIC CHIP 560PF	10% 50V	IC205	8-759-100-96	IC UPC4558G2	
C343	1-136-177-00	FILM 1uF	5% 50V	IC301	8-759-262-31	IC uPD78013GC-593-AB8	
C344	1-164-505-11	CERAMIC CHIP 2.2uF	16V	IC304	8-759-065-98	IC SAA6579T	
C345	1-163-243-11	CERAMIC CHIP 47PF	5% 50V	IC305	8-759-100-96	IC UPC4558G2	
C346	1-163-249-11	CERAMIC CHIP 82PF	5% 50V	IC306	8-759-161-78	IC LC7073M	
C350	1-124-126-00	ELECT 47uF	20% 10V	IC501	8-759-051-64	IC TC9215F	
C351	1-164-346-11	CERAMIC CHIP 1uF	16V	< JUMPER RESISTOR >			
C352	1-126-101-11	ELECT 100uF	20% 16V	JW301	1-216-295-00	METAL CHIP 0 5% 1/10W	
C353	1-124-903-11	ELECT 1uF	20% 50V	JW302	1-216-295-00	METAL CHIP 0 5% 1/10W (IT)	
C354	1-165-319-11	CERAMIC CHIP 0.1uF	50V	JW303	1-216-295-00	METAL CHIP 0 5% 1/10W (AEP, UK)	
C360	1-124-907-11	ELECT 10uF	20% 50V	JW306	1-216-295-00	METAL CHIP 0 5% 1/10W	
C361	1-164-505-11	CERAMIC CHIP 2.2uF	16V	JW307	1-216-295-00	METAL CHIP 0 5% 1/10W	
C362	1-136-177-00	FILM 1uF	5% 50V	< COIL >			
C363	1-164-505-11	CERAMIC CHIP 2.2uF	16V	L201	1-410-381-11	INDUCTOR CHIP 10uH	
C364	1-164-505-11	CERAMIC CHIP 2.2uF	16V	L204	1-410-464-11	INDUCTOR 3.3uH	
C501	1-126-101-11	ELECT 100uF	20% 16V	L250	1-410-397-21	FERRITE BEAD INDUCTOR	
C504	1-165-319-11	CERAMIC CHIP 0.1uF	50V	L301	1-410-393-11	INDUCTOR CHIP 100uH	
C505	1-165-319-11	CERAMIC CHIP 0.1uF	50V	< TRANSISTOR >			
< CONNECTOR >				Q110	8-729-232-69	TRANSISTOR 2SK208GR3	
* CN101	1-569-624-11	SOCKET, CONNECTOR 17P		Q111	8-729-018-60	TRANSISTOR 2SD2012-LC	
* CN103	1-568-832-11	SOCKET, CONNECTOR 13P		Q112	8-729-101-07	TRANSISTOR 2SB798-DL	
* CN108	1-568-828-11	SOCKET, CONNECTOR 9P		Q115	8-729-107-46	TRANSISTOR 2SC3624	
* CN205	1-568-954-11	PIN, CONNECTOR 5P		Q140	8-729-141-83	TRANSISTOR 2SB1094-LK	
< DIODE >				Q147	8-729-805-45	TRANSISTOR 2SC3395	
D101	8-719-200-02	DIODE 10E2		Q148	8-729-805-45	TRANSISTOR 2SC3395	
D102	8-719-200-02	DIODE 10E2		Q150	8-729-140-75	TRANSISTOR 2SD999-CLCK	
D105	8-719-200-02	DIODE 10E2		Q210	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
D106	8-719-200-02	DIODE 10E2		Q250	8-729-805-65	TRANSISTOR 2SA1344	
D110	8-719-022-03	DIODE UZM11Z		Q251	8-729-805-65	TRANSISTOR 2SA1344	
D111	8-719-990-39	DIODE DCB010		Q255	8-729-805-40	TRANSISTOR 2SC3900	
D135	8-719-990-39	DIODE DCB010		Q265	8-729-805-40	TRANSISTOR 2SC3900	
D160	8-719-021-88	DIODE UZM10B		Q311	8-729-805-65	TRANSISTOR 2SA1344	
D172	8-719-990-39	DIODE DCB010		Q312	8-729-805-41	TRANSISTOR 2SC3398	
D210	8-719-990-39	DIODE DCB010		Q315	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
D311	8-719-990-39	DIODE DCB010		Q319	8-729-805-65	TRANSISTOR 2SA1344	
D315	8-719-990-39	DIODE DCB010		< RESISTOR >			
< GROUND PLATE >				R110	1-216-073-00	METAL CHIP 10K 5% 1/10W	
* EB2	4-870-539-00	PLATE, GROUND		R111	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
* EB3	4-870-539-00	PLATE, GROUND		R140	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
< IC >				R144	1-216-073-00	METAL CHIP 10K 5% 1/10W	
IC102	8-759-605-00	IC M5F78M07L		R147	1-216-073-00	METAL CHIP 10K 5% 1/10W	
IC103	8-759-820-13	IC L78MR06		R150	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
IC104	8-759-636-24	IC M5290FP		R160	1-216-043-00	METAL CHIP 560 5% 1/10W	
IC201	8-759-283-48	IC TMP87CH47U-4103		R172	1-216-025-00	METAL CHIP 100 5% 1/10W	
IC203	8-759-040-83	IC BA6287F		R201	1-216-049-00	METAL CHIP 1K 5% 1/10W	
				R202	1-216-049-00	METAL CHIP 1K 5% 1/10W	

MAIN	PANEL
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Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
R203	1-216-049-00	METAL CHIP	1K	5%	1/10W	R317	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R205	1-216-073-00	METAL CHIP	10K	5%	1/10W	R318	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R206	1-216-073-00	METAL CHIP	10K	5%	1/10W	R319	1-216-097-00	METAL CHIP	100K	5%	1/10W
R207	1-216-073-00	METAL CHIP	10K	5%	1/10W	R325	1-216-049-00	METAL CHIP	1K	5%	1/10W
R208	1-216-073-00	METAL CHIP	10K	5%	1/10W	R326	1-216-049-00	METAL CHIP	1K	5%	1/10W
R209	1-216-073-00	METAL CHIP	10K	5%	1/10W	R327	1-216-049-00	METAL CHIP	1K	5%	1/10W
R210	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	R328	1-216-049-00	METAL CHIP	1K	5%	1/10W
R211	1-216-073-00	METAL CHIP	10K	5%	1/10W	R346	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R212	1-216-001-00	METAL CHIP	10	5%	1/10W	R350	1-216-097-00	METAL CHIP	100K	5%	1/10W
R215	1-216-049-00	METAL CHIP	1K	5%	1/10W	R351	1-216-097-00	METAL CHIP	100K	5%	1/10W
R216	1-216-073-00	METAL CHIP	10K	5%	1/10W	R352	1-216-295-00	METAL CHIP	0	5%	1/10W
R217	1-216-049-00	METAL CHIP	1K	5%	1/10W	R353	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R218	1-216-073-00	METAL CHIP	10K	5%	1/10W	R354	1-216-073-00	METAL CHIP	10K	5%	1/10W
R219	1-216-049-00	METAL CHIP	1K	5%	1/10W	R355	1-216-097-00	METAL CHIP	100K	5%	1/10W
R220	1-216-073-00	METAL CHIP	10K	5%	1/10W	R356	1-216-097-00	METAL CHIP	100K	5%	1/10W
R221	1-216-049-00	METAL CHIP	1K	5%	1/10W	R360	1-216-073-00	METAL CHIP	10K	5%	1/10W
R222	1-216-073-00	METAL CHIP	10K	5%	1/10W	R501	1-216-097-00	METAL CHIP	100K	5%	1/10W
R223	1-216-073-00	METAL CHIP	10K	5%	1/10W	R502	1-216-097-00	METAL CHIP	100K	5%	1/10W
R224	1-216-073-00	METAL CHIP	10K	5%	1/10W	< VIBRATOR >					
R225	1-216-073-00	METAL CHIP	10K	5%	1/10W	X201	1-579-125-11	VIBRATOR, CERAMIC (8MHz)			
R226	1-216-073-00	METAL CHIP	10K	5%	1/10W	X301	1-579-175-11	VIBRATOR, CERAMIC (10MHz)			
R227	1-216-073-00	METAL CHIP	10K	5%	1/10W	X304	1-579-900-21	VIBRATOR, CRYSTAL (4.332MHz)			
R228	1-216-073-00	METAL CHIP	10K	5%	1/10W	X306	1-577-082-11	VIBRATOR, CERAMIC (4MHz)			
R229	1-216-049-00	METAL CHIP	1K	5%	1/10W	*****					
R233	1-216-021-00	METAL CHIP	68	5%	1/10W	* A-4365-769-A	PANEL BOARD, COMPLETE				
R234	1-216-021-00	METAL CHIP	68	5%	1/10W	*****					
R251	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	* 4-932-810-11	CUSHION (FL)				
R252	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	* 4-954-187-11	HOLDER (FL)				
R253	1-216-073-00	METAL CHIP	10K	5%	1/10W	< CAPACITOR >					
R254	1-216-073-00	METAL CHIP	10K	5%	1/10W	C601	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
R255	1-216-105-00	METAL CHIP	220K	5%	1/10W	C602	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
R256	1-216-041-00	METAL CHIP	470	5%	1/10W	C603	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
R257	1-216-097-00	METAL CHIP	100K	5%	1/10W	C604	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
R258	1-216-097-00	METAL CHIP	100K	5%	1/10W	C605	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
R261	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	C606	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
R262	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	C607	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
R263	1-216-073-00	METAL CHIP	10K	5%	1/10W	C608	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
R264	1-216-073-00	METAL CHIP	10K	5%	1/10W	C609	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
R265	1-216-105-00	METAL CHIP	220K	5%	1/10W	C610	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
R266	1-216-041-00	METAL CHIP	470	5%	1/10W	C611	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
R301	1-216-049-00	METAL CHIP	1K	5%	1/10W	C612	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
R303	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	C613	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
R304	1-216-073-00	METAL CHIP	10K	5%	1/10W	C614	1-124-584-00	ELECT	100uF	20%	10V
R305	1-216-073-00	METAL CHIP	10K	5%	1/10W	C615	1-165-319-11	CERAMIC CHIP	0.1uF		50V
R311	1-216-073-00	METAL CHIP	10K	5%	1/10W	C616	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
R312	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	C617	1-124-248-00	ELECT	22uF	20%	35V
R313	1-216-073-00	METAL CHIP	10K	5%	1/10W	C618	1-136-173-00	FILM	0.47uF	5%	50V
R314	1-216-073-00	METAL CHIP	10K	5%	1/10W						
R315	1-216-001-00	METAL CHIP	10	5%	1/10W						
R316	1-216-061-00	METAL CHIP	3.3K	5%	1/10W						

PANEL

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C619	1-136-173-00	FILM	0.47uF 5% 50V			< FLUORESCENT INDICATOR >	
C620	1-136-173-00	FILM	0.47uF 5% 50V	FL601	1-517-241-11	INDICATOR TUBE, FLUORESCENT	
C621	1-163-117-00	CERAMIC CHIP	100PF 5% 50V			< COIL >	
C622	1-164-232-11	CERAMIC CHIP	0.01uF 50V				
C623	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	L601	1-408-793-21	INDUCTOR CHIP 220uH	
C624	1-165-319-11	CERAMIC CHIP	0.1uF 50V	L602	1-410-393-11	INDUCTOR CHIP 100uH	
C625	1-164-346-11	CERAMIC CHIP	1uF 16V			< TRANSISTOR >	
C626	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	Q603	8-729-805-41	TRANSISTOR 2SC3398	
C627	1-163-117-00	CERAMIC CHIP	100PF 5% 50V			< RESISTOR >	
C628	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R601	1-216-041-00	METAL CHIP 470 5% 1/10W	
C629	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R602	1-216-045-00	METAL CHIP 680 5% 1/10W	
C630	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R603	1-216-049-00	METAL CHIP 1K 5% 1/10W	
C631	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R604	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
C632	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R605	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
C633	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R606	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
C634	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R607	1-216-075-00	METAL CHIP 12K 5% 1/10W	
C635	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R608	1-216-041-00	METAL CHIP 470 5% 1/10W	
C636	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R609	1-216-045-00	METAL CHIP 680 5% 1/10W	
C637	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R610	1-216-049-00	METAL CHIP 1K 5% 1/10W	
C638	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R611	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
C639	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R612	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
C640	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R613	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
C641	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R614	1-216-075-00	METAL CHIP 12K 5% 1/10W	
C642	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R616	1-216-083-00	METAL CHIP 27K 5% 1/10W	
C643	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R617	1-216-097-00	METAL CHIP 100K 5% 1/10W	
C644	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R618	1-216-041-00	METAL CHIP 470 5% 1/10W	
C645	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R619	1-216-045-00	METAL CHIP 680 5% 1/10W	
C646	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R620	1-216-049-00	METAL CHIP 1K 5% 1/10W	
C647	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	R622	1-216-073-00	METAL CHIP 10K 5% 1/10W	
C648	1-163-117-00	CERAMIC CHIP	100PF 5% 50V			< SWITCH >	
C649	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	S601	1-554-303-21	SWITCH, TACTILE (▷◁)	
C650	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	S602	1-554-303-21	SWITCH, TACTILE (□)	
C651	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	S603	1-554-303-21	SWITCH, TACTILE (BAND)	
C652	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	S604	1-554-303-21	SWITCH, TACTILE (MEMORY)	
C653	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	S605	1-554-303-21	SWITCH, TACTILE (MODE)	
C654	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	S606	1-554-303-21	SWITCH, TACTILE (STEREO/MONO)	
C655	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	S607	1-554-303-21	SWITCH, TACTILE (+)	
C656	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	S608	1-554-303-21	SWITCH, TACTILE (-)	
C657	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	S609	1-554-303-21	SWITCH, TACTILE (▶▶▶▶)	
C658	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	S610	1-554-303-21	SWITCH, TACTILE (◀◀◀◀)	
C659	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	S614	1-554-303-21	SWITCH, TACTILE (EDIT)	
C660	1-163-117-00	CERAMIC CHIP	100PF 5% 50V	S615	1-554-303-21	SWITCH, TACTILE (REPEAT)	
		< CONNECTOR >		S616	1-554-303-21	SWITCH, TACTILE (PLAY MODE)	
* CN601	1-568-856-11	SOCKET, CONNECTOR 13P		S617	1-554-303-21	SWITCH, TACTILE (OPEN/CLOSE △)	
		< IC >		S618	1-554-303-21	SWITCH, TACTILE (EON)	
IC601	8-759-261-63	IC M66004M6FP		S619	1-554-303-21	SWITCH, TACTILE (PTY)	

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
S620	1-554-303-21	SWITCH, TACTILE (DISPLAY)		C55	1-163-105-00	CERAMIC CHIP 33PF 5%	50V (AEP, UK)
*****				C55	1-163-135-00	CERAMIC CHIP 560PF 5%	50V (G, IT)
*	A-4303-459-A	TCB BOARD, COMPLETE (AEP, UK)		C56	1-163-117-00	CERAMIC CHIP 100PF 5%	50V (G, IT)
*****				C57	1-164-346-11	CERAMIC CHIP 1uF	16V
*	A-4303-460-A	TCB BOARD, COMPLETE (G, IT)		C58	1-164-346-11	CERAMIC CHIP 1uF	16V
*****				C59	1-164-346-11	CERAMIC CHIP 1uF	16V
< CAPACITOR >				C60	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C1	1-126-934-11	ELECT 220uF 20%	16V	C61	1-163-022-00	CERAMIC CHIP 0.012uF 10%	50V
C2	1-163-031-11	CERAMIC CHIP 0.01uF	50V	C62	1-163-022-00	CERAMIC CHIP 0.012uF 10%	50V
C3	1-163-009-11	CERAMIC CHIP 1000PF 10%	50V	C63	1-164-346-11	CERAMIC CHIP 1uF	16V
C5	1-163-031-11	CERAMIC CHIP 0.01uF	50V (AEP, UK)	C64	1-164-346-11	CERAMIC CHIP 1uF	16V
C6	1-163-038-00	CERAMIC CHIP 0.1uF	25V (AEP, UK)	C65	1-164-346-11	CERAMIC CHIP 1uF	16V
C6	1-216-295-00	METAL CHIP 0 5%	1/10W (G, IT)	C66	1-164-346-11	CERAMIC CHIP 1uF	16V
C8	1-163-031-11	CERAMIC CHIP 0.01uF	50V	C69	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C9	1-163-012-00	CERAMIC CHIP 1800PF 10%	50V (AEP, UK)	C71	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C10	1-163-011-11	CERAMIC CHIP 1500PF 10%	50V (AEP, UK)	C72	1-126-934-11	ELECT 220uF 20%	16V
C11	1-163-089-00	CERAMIC CHIP 6PF 0.5PF	50V (AEP, UK)	C73	1-124-257-00	ELECT 2.2uF 20%	50V
C11	1-163-091-00	CERAMIC CHIP 8PF 0.25PF	50V (G, IT)	C74	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C12	1-163-227-11	CERAMIC CHIP 10PF 0.5PF	50V	C75	1-126-157-11	ELECT 10uF 20%	16V
C13	1-163-089-00	CERAMIC CHIP 6PF 0.5PF	50V (AEP, UK)	C76	1-126-933-11	ELECT 100uF 20%	16V
C21	1-163-099-00	CERAMIC CHIP 18PF 5%	50V	C79	1-126-157-11	ELECT 10uF 20%	16V
C22	1-163-099-00	CERAMIC CHIP 18PF 5%	50V	C80	1-126-925-11	ELECT 470uF 20%	10V
C23	1-163-031-11	CERAMIC CHIP 0.01uF	50V	C81	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C24	1-163-031-11	CERAMIC CHIP 0.01uF	50V	C82	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C25	1-163-031-11	CERAMIC CHIP 0.01uF	50V	C83	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C26	1-164-346-11	CERAMIC CHIP 1uF	16V	C86	1-163-016-00	CERAMIC CHIP 3900PF 10%	50V
C27	1-124-257-00	ELECT 2.2uF 20%	50V	C87	1-163-016-00	CERAMIC CHIP 3900PF 10%	50V
C29	1-163-031-11	CERAMIC CHIP 0.01uF	50V	< FILTER >			
C31	1-124-257-00	ELECT 2.2uF 20%	50V	CF1	1-567-389-11	FILTER, CERAMIC	
C32	1-163-031-11	CERAMIC CHIP 0.01uF	50V	CF2	1-567-389-11	FILTER, CERAMIC (G, IT)	
C33	1-163-038-00	CERAMIC CHIP 0.1uF	25V	CF51	1-567-389-11	FILTER, CERAMIC	
C34	1-164-005-11	CERAMIC CHIP 0.47uF	25V (AEP, UK)	< TERMINAL >			
C35	1-163-033-00	CERAMIC CHIP 0.022uF	50V (AEP, UK)	* CN3	1-537-613-11	TERMINAL (8P)	
C36	1-163-033-00	CERAMIC CHIP 0.022uF	50V (AEP, UK)	< DIODE >			
C51	1-163-031-11	CERAMIC CHIP 0.01uF	50V	D21	8-719-422-46	DIODE MA8056	
C52	1-126-162-11	ELECT 3.3uF 20%	50V	D51	8-719-016-74	DIODE 1SS352	
C53	1-163-031-11	CERAMIC CHIP 0.01uF	50V	< FRONT END >			
C54	1-163-031-11	CERAMIC CHIP 0.01uF	50V	FE1	1-465-673-11	FRONT END (2 BAND) (AEP, UK)	
				FE1	1-465-007-11	FRONT END (4 GANG) (G, IT)	
				FE2	1-239-261-12	ESCAPSULATED COMPONENT (AEP, UK)	
				FE2	1-239-260-11	ESCAPSULATED COMPONENT (G, IT)	
				FE3	1-236-463-11	ESCAPSULATED COMPONENT (AEP, UK)	

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
		< FILTER >					
FL51	1-239-029-11	ESCAPSULATED COMPONENT (G, IT)		R2	1-216-037-00	METAL CHIP 330 5% 1/10W	
		< IC >		R3	1-216-109-00	METAL CHIP 330K 5% 1/10W	
IC21	8-759-821-43	IC LC7218M		R4	1-216-037-00	METAL CHIP 330 5% 1/10W	
IC51	8-759-823-68	IC LA1851NM		R5	1-216-109-00	METAL CHIP 330K 5% 1/10W (G, IT)	
		< TRANSFORMER >		R6	1-216-037-00	METAL CHIP 330 5% 1/10W (G, IT)	
IFT51	1-406-821-11	COIL (DISCRIMINATOR)		R7	1-216-017-00	METAL CHIP 47 5% 1/10W	
IFT52	1-404-713-11	TRANSFORMER, 1F		R8	1-216-057-00	METAL CHIP 2.2K 5% 1/10W (AEP, UK)	
		< JUMPER RESISTOR >		R9	1-216-089-11	METAL CHIP 47K 5% 1/10W (AEP, UK)	
JW1	1-216-295-00	METAL CHIP 0 5% 1/10W		R10	1-216-097-11	METAL CHIP 100K 5% 1/10W (AEP, UK)	
JW2	1-216-295-00	METAL CHIP 0 5% 1/10W (AEP, UK)		R11	1-216-065-00	METAL CHIP 4.7K 5% 1/10W (AEP, UK)	
JW3	1-216-295-00	METAL CHIP 0 5% 1/10W (G, IT)		R12	1-216-057-00	METAL CHIP 2.2K 5% 1/10W (AEP, UK)	
JW4	1-216-295-00	METAL CHIP 0 5% 1/10W (G, IT)		R13	1-216-089-11	METAL CHIP 47K 5% 1/10W	
JW5	1-216-295-00	METAL CHIP 0 5% 1/10W		R14	1-216-081-00	METAL CHIP 22K 5% 1/10W	
JW6	1-216-295-00	METAL CHIP 0 5% 1/10W (G, IT)		R15	1-216-121-00	METAL CHIP 1M 5% 1/10W (AEP, UK)	
JW7	1-216-295-00	METAL CHIP 0 5% 1/10W		R15	1-216-295-00	METAL CHIP 0 5% 1/10W (G, IT)	
JW8	1-216-295-00	METAL CHIP 0 5% 1/10W		R16	1-216-089-11	METAL CHIP 47K 5% 1/10W (AEP, UK)	
JW9	1-216-295-00	METAL CHIP 0 5% 1/10W		R21	1-216-049-00	METAL CHIP 1K 5% 1/10W	
		< COIL >		R22	1-216-049-00	METAL CHIP 1K 5% 1/10W	
L1	1-408-793-21	CHIP INDUCTOR 220uH (AEP, UK)		R23	1-216-049-00	METAL CHIP 1K 5% 1/10W	
L51	1-408-798-00	CHIP INDUCTOR 1MMH		R24	1-216-025-00	METAL CHIP 100 5% 1/10W	
		< FILTER >		R25	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
LPF51	1-239-597-11	FILTER, LOW PASS		R26	1-216-049-00	METAL CHIP 1K 5% 1/10W	
LPF52	1-239-597-11	FILTER, LOW PASS		R27	1-216-073-00	METAL CHIP 10K 5% 1/10W (AEP, UK)	
		< TRANSISTOR >		R28	1-216-073-00	METAL CHIP 10K 5% 1/10W	
Q1	8-729-804-72	TRANSISTOR 2SC2814-F4		R29	1-216-025-00	METAL CHIP 100 5% 1/10W	
Q2	8-729-804-72	TRANSISTOR 2SC2814-F4 (G, IT)		R30	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
Q3	8-729-810-16	TRANSISTOR 2SA1678		R31	1-216-043-00	METAL CHIP 560 5% 1/10W	
Q4	8-729-602-36	TRANSISTOR 2SA1602-F (AEP, UK)		R32	1-216-049-00	METAL CHIP 1K 5% 1/10W	
Q5	8-729-810-28	TRANSISTOR 2SC4398 (AEP, UK)		R33	1-216-035-00	METAL CHIP 270 5% 1/10W	
Q6	8-729-602-36	TRANSISTOR 2SA1602-F (AEP, UK)		R34	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
Q7	8-729-810-28	TRANSISTOR 2SC4398 (AEP, UK)		R35	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
Q21	8-729-602-21	TRANSISTOR 2SC4154-F		R36	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
Q22	8-729-232-69	TRANSISTOR 2SK208GR3		R37	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
Q23	8-729-232-59	TRANSISTOR 2SC4666B		R38	1-216-025-00	METAL CHIP 100 5% 1/10W	
Q24	8-729-232-69	TRANSISTOR 2SK208GR3 (AEP, UK)		R39	1-216-061-00	METAL CHIP 3.3K 5% 1/10W (AEP, UK)	
Q25	8-729-232-59	TRANSISTOR 2SC4666B (AEP, UK)		R40	1-216-043-00	METAL CHIP 560 5% 1/10W (AEP, UK)	
Q51	8-729-602-21	TRANSISTOR 2SC4154-F		R41	1-216-049-00	METAL CHIP 1K 5% 1/10W (AEP, UK)	
Q52	8-729-602-21	TRANSISTOR 2SC4154-F		R42	1-216-035-00	METAL CHIP 270 5% 1/10W (AEP, UK)	
Q53	8-729-810-28	TRANSISTOR 2SC4398		R43	1-216-081-00	METAL CHIP 22K 5% 1/10W (AEP, UK)	
		< RESISTOR >		R44	1-216-057-00	METAL CHIP 2.2K 5% 1/10W (AEP, UK)	
R1	1-216-037-00	METAL CHIP 330 5% 1/10W		R45	1-216-065-00	METAL CHIP 4.7K 5% 1/10W (AEP, UK)	
				R46	1-216-065-00	METAL CHIP 4.7K 5% 1/10W (AEP, UK)	
				R51	1-216-049-00	METAL CHIP 1K 5% 1/10W	
				R52	1-216-081-00	METAL CHIP 22K 5% 1/10W	
				R53	1-216-085-00	METAL CHIP 33K 5% 1/10W	
				R54	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
				R55	1-216-075-00	METAL CHIP 12K 5% 1/10W (AEP, UK)	
				R56	1-216-075-00	METAL CHIP 12K 5% 1/10W (G, IT)	
				R57	1-216-073-00	METAL CHIP 10K 5% 1/10W	
				R58	1-216-066-00	METAL CHIP 5.1K 5% 1/10W	

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R59	1-216-065-00	METAL CHIP	4.7K 5% 1/10W	D805	8-719-934-22	DIODE HZS30-2L	
R60	1-216-065-00	METAL CHIP	4.7K 5% 1/10W			< IC LINK >	
R61	1-216-115-00	METAL CHIP	560K 5% 1/10W	△ICP801	1-532-839-11	LINK, IC (PRF1000 1.0A)	
R62	1-216-115-00	METAL CHIP	560K 5% 1/10W	△ICP802	1-532-839-11	LINK, IC (PRF1000 1.0A)	
						< TRANSISTOR >	
R63	1-216-049-00	METAL CHIP	1K 5% 1/10W	Q801	8-729-804-41	TRANSISTOR 2SB1122-S	
R64	1-216-049-00	METAL CHIP	1K 5% 1/10W			< RESISTOR >	
R65	1-216-073-00	METAL CHIP	10K 5% 1/10W	R802	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R66	1-216-073-00	METAL CHIP	10K 5% 1/10W	R803	1-216-041-00	METAL CHIP 470 5% 1/10W	
R67	1-216-057-00	METAL CHIP	2.2K 5% 1/10W	R804	1-216-041-00	METAL CHIP 470 5% 1/10W	
				R805	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R68	1-216-057-00	METAL CHIP	2.2K 5% 1/10W	R806	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R69	1-216-025-00	METAL CHIP	100 5% 1/10W				
R70	1-216-025-00	METAL CHIP	100 5% 1/10W	R812	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R71	1-216-089-11	METAL CHIP	47K 5% 1/10W			< TRANSFORMER >	
R72	1-216-073-00	METAL CHIP	10K 5% 1/10W	△T801	1-426-704-11	TRANSFORMER, POWER	

R73	1-216-073-00	METAL CHIP	10K 5% 1/10W			MISCELLANEOUS	
R74	1-216-013-00	METAL CHIP	33 5% 1/10W			*****	
R75	1-216-061-00	METAL CHIP	3.3K 5% 1/10W				
		< VARIABLE RESISTOR >					
RV51	1-238-601-11	RES, ADJ, CARBON 22K					
RV52	1-238-601-11	RES, ADJ, CARBON 22K					
RV53	1-238-598-11	RES, ADJ, CARBON 2.2K					
		< CONNECTOR >					
TP51	1-564-505-11	PLUG, CONNECTOR 2P					
		< VIBRATOR >					
X21	1-579-585-11	VIBRATOR, CRYSTAL (7.2MHz)					
X51	1-577-075-11	OSCILLATOR, CERAMIC (456kHz)					

*	1-649-896-11	TRANS BOARD					

		< CAPACITOR >					
C801	1-124-122-11	ELECT 100uF 20% 50V					
C802	1-124-122-11	ELECT 100uF 20% 50V					
C803	1-124-122-11	ELECT 100uF 20% 50V					
C804	1-124-122-11	ELECT 100uF 20% 50V					
C805	1-165-319-11	CERAMIC CHIP 0.1uF 50V					
C810	1-165-319-11	CERAMIC CHIP 0.1uF 50V					
		< CONNECTOR >					
* CN801	1-568-852-11	SOCKET, CONNECTOR 9P					
		< DIODE >					
D801	8-719-200-02	DIODE 10E2					
D802	8-719-200-02	DIODE 10E2					
D803	8-719-200-02	DIODE 10E2					
D804	8-719-021-23	DIODE UZM4.7B					

The components identified by mark △ or dotted line with mark △ are critical for safety.
 Replace only with part number specified.

